

**THE USE OF A MODIFIED STRATEGY-BASED MODULE IN DEVELOPING  
CREATIVE THINKING AND SELF-CONCEPT OF LOW ACHIEVERS IN  
JORDAN**

**by**

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Philosophy**

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**UNIVERSITI SAINS MALAYSIA**

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## **Dedication**

*They say that behind every good man is a magnificent woman.*

*Then, I must be a good man because my mother is absolutely outstanding. To my mother and my father who fills my life with joy.*

*Special Dedication for My Uncle Khalaf ALMaddan and Dr.Suad*

*Dahman and Dr.Saher AL Sabbah.and*

*To every person who gave me support.*

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## **LIST OF ABBREVIATIONS**

CT	Creative Thinking
SC	Self Concept
MSBM	Modified Strategy Based Module
CUSBM	Currently Used Strategy Based Module
DV	Dependent Variable
IV	Independent Variable
TC	Control Group Teacher

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**PENGUNAAN MODUL BERASAKAN STRATEGI YANG  
DIUBAH SUAI DALAM MEMBANGUNKAN PEMIKIRAN KREATIF DAN  
KONSEP KENDIRI PELAJAR BERPENCAPAIAN RENDAH DI JORDAN**

**ABSTRAK**

Kajian ini bertujuan menentukan keberkesanan modul berasaskan strategi yang diubah suai (MSBM) berpandukan CoRt dan SCAMPER dalam membangunkan pemikiran kreatif dan konsep sendiri dalam kalangan sampel berpencaapaian rendah di Jordan. Sampel kajian terdiri daripada 160 orang pelajar tahun enam (perempuan dan lelaki) berpencaapaian rendah, yang dipilih secara rawak daripada 8 buah bilik sumber di Bandar Al-mafareq. Sampel dibahagikan kepada empat kumpulan, Kumpulan eksperimen didedahkan dengan MSBM dan kumpulan kawalan pula didedahkan dengan modul berasaskan strategi semasa (CSBUM) selama 4 minggu, yang kemudiannya disusuli dengan pascaujian. Dapatan menunjukkan bahawa terdapat perbezaan yang signifikan di antara min pascaujian daripada prestasi dua kumpulan eksperimen dengan dua kumpulan kawalan. Suatu analisis varians berdasarkan respons yang betul daripada gred pascaujian (Piers-Harris 2 Self – Concept Scale) dan (Torrance Creative Thinking Test) menunjukkan perbezaan yang signifikan di antara kumpulan eksperimen dan kawalan dalam pemikiran kreatif dan konsep sendiri mereka. Sebagai ringkasan, dapatan kajian ini tidak hanya menyokong pendapat semasa tentang latihan yang sesuai bagi pemikiran kreatif dan konsep sendiri pelajar berpencaapaian rendah di Jordan. Sebaliknya, ia juga menonjolkan fakta bahawa tindakan perlu diambil untuk menangani kegagalan ahli pendidik menggunakan kaedah yang berkesan dalam usaha menambah baik tahap pemikiran kreatif dan konsep diri pelajar berpencaapaian rendah di Jordan. Justeru, satu daripada caranya adalah dengan memanfaatkan dapatan kajian ini untuk melihat kemungkinan melatih pelajar berpencaapaian rendah di bilik-bilik sumber di Jordan, dalam cara yang lebih berfaedah dan integratif. Di samping itu, kajian ini turut menyarankan beberapa cadangan.

**THE USE OF A MODIFIED STRATEGY-BASED MODULE IN  
DEVELOPING CREATIVE THINKING AND SELF-CONCEPT OF LOW  
ACHIEVERS IN JORDAN**

**ABSTRACT**

The purpose of this study was to find the effectiveness of a modified strategy-based module (MSBM) that based on CoRt and SCAMPER in the development of creative thinking and self-concept among a sample of low achievers in Jordan. The study sample comprised 160, sixth year female and male elementary low achievers randomly selected from 8 resource rooms at Al-mafareq governorate. The sample was divided into four groups. The experimental groups received the modified strategy-based module (MSBM) and the control groups received the currently strategy-based used module (CSBUM) for four weeks, after which a post-test was administered. The findings revealed that there is a significant difference between the post-test means of the two experimental groups against the two control groups' performance. An analyses of variance based on correct responses recall for the (Piers-Harris 2 Self –Concept Scale) and (Torrance Creative Thinking Test) post-tests' grades indicated significant differences between the experimental and control groups in their creative thinking and self-concept. In summary, the findings of this study not only support current opinion regarding the state of training low achievers' creative thinking and self-concept in Jordan, but more pertinently, it highlights the fact that remedial action needs to be taken to address the inherent failure of the educationists to follow effective methods to improve low achievers' creative thinking and self-concept to improve academic performance. One way of doing so would be to use the findings of this study to look into the possibility of training low achievers in the Jordanian resource rooms in a useful and integrative manner. Consequently, the study has recommended some suggestions.



# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

The world educational systems were changed dramatically to be consistent with the ever-changing world. These changes have a mark on the goals of the educational systems. Mattar (2000) and Robinson (1987) state that the main goal of schools is to help students to develop necessary thinking and learning skills to be effective members in their societies and be able to cope with challenges in the world. In spite of the great efforts of educators to strive and achieve this goal, there will always be students facing learning difficulties. However, students who failed to learn effectively have been labeled as low achievers or at risk students.

Fogarty and McTighe (1993) state that creative thinking (CT) and self-concept (SC) are recognized as essential and crucial areas in the development of low achievers and a failure to learn and benefit from academic services that offered by schools do not only affect students' academic achievements, but it also affects the way students socialize at school and the way they solve their life problems and build their SC. Though SC, generally, refers to the combination of ideas, perceptions, feelings, and the attitudes of surrounding people, it is not fixed as it varies from situation to situation and from one phase of life to another. Researchers (Woolfolk, Winne & Perry, 2006) show that positive SC is related to overall school experiences both academically and socially.

Clearly there is still much controversy over the criteria used in determining eligibility for low achievers in schools and in societies of developing countries. In fact, in most developing countries the provision of educational services for low achievers is still at its initial stage. Low achievers need to be able to acquire creativity tends to be domain-specific. A few definitions were found during the research process. According to Fogarty and McTighe (1993) insights creative or innovative thinking is the kind of thinking that leads to new insights.

Bellis (2003) writes about Scott Isaksen and Donald Treffinger's creative problem solving model. According to the authors creative thinking (CT) is described as follows:

- (a) Make and communicate connections to think of many possibilities.
- (b) Think and experience in various ways and use different points of view.
- (c) Think of new and unusual possibilities.
- (d) Guide in generating and selecting alternatives.

CT skills are tools that help low achievers to make connections to think of many possibilities, experience in various ways and uses of different points of view that guide in generating and selecting alternatives. Such skills according to the author can help low achievers to gain knowledge (Bellis 2003).

Other studies on CT have listed effective teaching skills such as, the ability of problem solving, the test on deductive thinking to assess low achievers to develop their academic performance [Jarawan, (2002); Larson, (2002); Rottman & Cross, (1990).] In short, teaching low achievers CT is one of the major objectives that educationalists aim to achieve in order to make these students develop the ability to confront present and future problems interactively ( Jarawan 2002).

Self- Concept (SC) according to Dawood and Hamdi (1997) is regarded as one of the most important constituents of personality. The development of SC is closely related to the development of mental planning, and vice versa. In his theory, Piaget refers to this as self-centralization (Burns, 1982). For Granvold, (1994) environment plays an important role in the learning process. Granvold states that environment governs the directions and persistence of actions, therefore, it should be under the control of the teacher. This control of environment can actually influence the interaction of students. In short, this interaction will help the students to acquire specific directions such as self-discipline, responsibility, self-confidence, SC reinforcement, work- group cooperation styles and respecting opinions and feelings of others. Thus, SC is the image we have of ourselves. It refers to the set of characteristics or attributes we use to define ourselves as individuals and to differentiate ourselves from others. This knowledge, according to López and Schnitzler (1983) is not present at birth, but is the result of an active process of construction throughout the whole time-span of development. Guilford (1983) argues for the existence of a relationship between SC and creativity, without determining which of these variables comes before the other. This means that having a positive SC contributes to the emergence of the human being's creative potential.

There is a variety of published research in the topics of assessment, development of thinking and perception of SC in low achievers (Kattami, 2001). According to Kattami (2001), this kind of research aims at highlighting a framework to determine the usage of strategy-based-program in developing CT strategies for low achievers. Kattami added that such a program will enable them to improve their academic achievement and their perception of SC. The author added that CT strategies will motivate low achievers to generate new ideas that can be considered as different methods of solving their academic and life problems.

Thus, teachers and policy makers and curriculum planners' understanding of the programs and ways that Jordanian low achievers need, might improve their CT and SC. In this context, experts in the field of special education have recommended some educational developmental programs such as SCAMPER and CoRT to be used to help low achievers in improving their skills and academic achievement [Badareen, (2006); Kattami, (2001).] According to (Badareen, 2006) these programs will facilitate the low achievers understanding of academic knowledge as well as their SC. The SCAMPER program considers a famous method of creativity that can be used to motivate students to develop new cognitive skills. On the other hand, the CoRT program which was developed by Edward Debono in 1974 is used to develop low achievers' thinking skills.

This brief overview summarized the importance of SC and CT for low achievers. After this, this chapter moves on to describe the background of the study, which gives an overview of Jordan where the study was conducted and the educational system in Jordan. Then it highlights the statement of the problem, the objectives, the research

questions, hypotheses and significance of the study. This is followed by the rationale of the study, limitation, definition of terms. It ends by the conceptual frame work.

## **1.2 Background of Study**

Jordan is a comparatively small Arab country. It is located in the southern eastern shore of the Mediterranean, covering an area of 90,000 square kilometers, with a population of about 5 million and an area of 93,000 square kilometers. According to estimations of 1996, Jordan's population amounted to 4,530,000. About 42.7% of the population is under the age of 15 (Ministry of Education, 2009). In 1987, at the First National Conference of Educational Development, Jordanian educators made the provision for quality education for all special education learners. In Jordan, the age group under shapes about 40 percent of the population, 20 percent of these children are low achievers who have been undermined in their educational opportunities and socially marginalized (John, 2002). The population year growth rate in 2004 was estimated to be 2.8%, but the recent rate increase is 2.4% a year. Roughly, 38% of the population is less than 15 years of age. The population age group of 15-65 years is about 58.5% and the population age over 65 is approximately 3.5% (Department of Statistics, 2008). Jordan consists of a variety of historical sites, and has a very suitable climate for tourism.

### **1.2.1 General Education in Jordan**

The development of Jordan's educational system is dramatic. With the development of this system started in early 1921, Jordan has forged a comprehensive high-quality educational system to develop the human capital of its citizens. Currently, there are 3182 public schools, 2138 private schools and 178 schools in association with

the United Nations Relief and Work Agency for Refugees (UNRWA) (Ministry of Education, 2008). Furthermore, there are 43 community colleges and 23 universities (Ministry of Higher Education and Scientific Research 2008). In Jordan, access to the basic education has been emphasized in all of its development plans of the country. The government has, as a matter of policy, provided every village and community that has 10 or more children, above 6 years old, with a school. This rapid increase of facilities has enabled citizens in poor and distant areas to gain access to education (Ministry of Education, 20). The Ministry of Education in Jordan started to show concern for low achievers needs. Students who have weakness in reading, writing and mathematics are sent to the resource rooms that are arranged to fulfill the needs of the low achievers.

### **1.2.2 Resource Room Program**

A resource room is an educational alternative used by the Ministry of Education (MOE) to provide special educational services to low achievers and slow learners. Al Hassan (1992) describes a resource room in a regular school has an area that ranges between 30 square meters to 48 square meters which is equipped with appropriate furniture, appropriate teaching aids and games. Students usually spend most of their time in the regular class, but they come to the resource room for different periods of the day for individual educational programs. In other words, they come for part of the day to receive special education in arithmetic, reading, writing, and social skills. Al Hassan says that some students, however, may spend most of the day in the resource room and part of the day in the regular classroom with their peers receiving education in social drama and music.

Nabteety & Jabber (1996) said that the number of students coming to the resource room is 20-25. These students usually come from the second, third, and fourth grade. The students are divided into study groups according to the level of their performance in reading, writing, language skills, and arithmetic. The students usually taught between 20-25 periods weekly in the following subjects' i.e. Arabic language and Mathematics.

According to Alrousan (2011), a resource room is the primary source of alternative help for low achievers. For Alrousan low achievers are those children who have low academic achievement and face difficulties in reading, language learning, and writing with scheduled seating in the resource room. The study time spent in the resource room greatly varies (Kaplan, 1996), however, the least restrictive environment for certain students may require more intensive one-to-one teaching. Students with mild disabilities are normally seated in the regular classroom. Often, this type of educational requirement is delivered in the resource room. This academic responsibility makes Wiederholt, Hammill, and Brown (1983:3) define the resource room as "any instructional setting in which a person (usually the resource teacher) has the responsibility of providing supportive educational related services to students or to their teachers". But, with regards to students, the same writers state that the "resource room is any setting in the school to which a child comes to receive specific instruction on a regular scheduled basis, while receiving the major part of his/ her learning elsewhere, which is usually in a regular or special class program (ibid:4). Adopting the same point of view, the United States Department of Education (1990) described a resource room as a setting where students receive special education and related services for 60 percent or

less of school day and at least 21 percent. This time structure may include the time in the resource room with part-time instructors in the regular class. However, Smith, Finn, & Dowdy, (1993) believed that no one would advocate this kind of structure to determine the exact combination of student's team in the regular and in the special classes. Going beyond the limits of the ordinary classroom, Whittaker & Taylor (1995) hold that a resource room is "a setting other than the regular classroom to which students with mild disabilities take up 50% of their educational programs".

According to Friend and McNutt (1984), a resource room is "a structural arrangement in which students with disabilities receive some instructional assistance, although most of these students' educational program takes place in the general education setting". Similarly, Lerner (2000) talks about a resource room as "an educational setting that provides assessment services and remedial instruction to students with disabilities on a regular scheduled basis for a portion of the school day". Thus, a resource room is most frequently multi-categorical, and so, it can accommodate students displaying mild or moderate disabilities. According to the U.S. (Department of Education 1995), the resource room means that students spend 21 to 60 percent of their time outside the regular classroom. The resource room offers flexibility in terms of the curriculum covered, the time students spend in the program, the number of students served and the teachers' time. The time each student spends in the resources room is based on his or her needs and usually ranges from three hours per week to half of the school day (Bender, 1996). Traditionally, instruction focuses on academic areas in which students display severe skill deficiencies. However, non-academic areas can be addressed, including social skills, job finding, maintenance and appropriate use of



leisure time. Regardless of the skill being addressed, instruction will be more effective if it reflects cooperative efforts of secondary teachers and the consultant ,Schloss, Smith, & Schloss, (2001).

No doubt, the resource room is becoming a supporting element for regular education instruction as stated by Lerner (2000) and hence care must be taken in scheduling students for resource room programs. For example, if the student enjoys physical education, the teacher should avoid pre-empting this period for the resource room session. In other words, the regular classroom teacher must be consulted on the opportune time for the student to leave the classroom

A resource room should also be pleasant and should have an abundant supply of materials. It should be used by the students since the low achievers often have short attention spans, and therefore would be wise to provide a change of pace by planning several activities and using the materials during a teaching session (Kaplan, 1996). Furthermore, researchers such as Whittaket and Taylor, (1995) have found that resource room teachers have listed lack of time to fulfill role functions as a primary constrain on interaction between regular and special educators. In view of that, materials can assist in alleviating this problem. According to the authors a resource room should be located in the same building with regular classroom. As such teachers, administrators, and students can readily interact with the resource room teacher and therefore he or she may be readily accepted by them. The resource room teacher's schedule should be flexible so that he or she can collaborate with the classroom teacher. According to the authors when

establishing a resource room, consideration must be given to the following characteristics:

- (a) The resource room teachers must enable students with low achievement to benefit from specific instruction while remaining integrated with their friends and peers in the mainstream.
- (b) The resource room should be flexible and enough to fit in the learning level as required. Primary school resources programs can be very different from those of secondary school resource programs.
- (c) The resource room teachers should be a highly competent and personable individual who is able to coordinate his or her efforts with other classroom teachers. Besides, he/she should be capable of making educational behavior assessments, designing and implementing instructions and also working effectively with parents and families.
- (d) The resource room should be attractive and well organized. Since the students in the general education must learn together with the regular class student instructions in the two settings should be coordinated (Lerner, 2000, 2007; Khuzai, 2001).

Similarly, Mercer (1997) states that the role of the resource room teacher demands a highly competent, personalized individual who is able to work effectively and harmoniously with regular education teachers and ancillary staff. Wiederholt (as cited in LaMelza, 2007) divides the responsibilities of the resources room teacher into three major categories: (1) assessment, (2) teaching and (3) consulting.

McNamara (1989) indicates that the role of the resource room teacher is more complex than is often realized. However, several researchers (Voltz, Elliott, & Harriss, 1995) in their survey of 228 general education teachers' view of the resource room teacher's role, find that over 50% of the respondents rated this role as vitally of the following: (a) attend parent conferences; (b) meet informally to discuss student progress; (c) provide remedial instruction in the resource room; (d) provide information on behavioral characteristics; (e) provide academic assessment data; (f) provide material for classroom use and (g) provide written report activities and progress.

Furthermore, the success of the resource room program refers to the competency of the resource room teacher, the cooperativeness and interaction with the regular education teachers and support from the administration (Ellet 1993)

Based on a review of 20 years of research in the field of assessment and decision making for low achievers, Ysseldyke (2005) concluded that the source of problems regarding performance of special learners is the failure of assessment procedures in identifying and evaluating the disabilities of low achievers and special students. Ysseldyke presents the following:

- (a) The inconsistency of decisions made by special education teams in the field of learning disability.
- (b) The fact that most decisions are based on students' characteristics rather than data-based assessment.
- (c) The declaration of many low achieving students as learning disability students.

- (d) The absence of adequate measures for psychological assessment processes despite the availability of adequate norm-referenced tests.

Low achievers, to Pearl & Bay (1999) are students who achieve poor results in all their school subjects such as Mathematics, Arabic Language, English Language, Chemistry, Literature, and Science. These poor results are due to factors, such as lack of motivation, health problems and social problems. Moreover, there are individual differences among low achievers. Some of them can read well although they face difficulties in writing and others can fast- pace understanding but they cannot read well (ibid). Similarly, the Ministry of Education of Jordan (2009) puts forward that low achievers are those students who have low achievement in school. Their average score, ranges between 50 and 60 percent. These students are mostly transferred to the resource rooms.

Mercer and Mercer (2001) listed general features of low achievers and divided it into three specific features. They are as follows:

- (a) Low in academic achievement: This happens in one or more of the academic subjects such as in Language and Mathematical subjects. Language and reading difficulties are the most common problems among these students because there is a strong relationship between language skills and academic functions. There is also difficult to determine whether the problem is in language or in reading.
- (b) Hyperactivity and problems in attention: The low achievers usually look at unrelated allergens, so they have problems in choosing the allergens. In this case,

they are known to have attention deficit disorder, an attention deficit and hyperactive disorder.

- (c) Poor social skills: This includes problems such as appreciating others, accepting criticism, receiving feedback, greeting others and the ability to say no. These problems arise because of the lack of understanding of social traditions. These students also have difficulty in interacting with their friends and teachers.

Mercer and Mercer (2001) claimed that low achievers show negative feelings about themselves because they are faced with academic frustration. These students are sometimes weak in sports activities and in social relations. They lack motivation due to the fact that they are unsuccessful in their life skills especially in their studies. In general, students believe that success is associated with external factors such as environment and the family's economic status (FES). They have high levels of anxiety and fear, high sensitivity and feel more pressured in comparison to their friends. According to Mercer and Mercer (2001) academic achievement and social relations can influence behavior. They enable individuals to arrange their life positively and flexibly to meet life's requirement. Mercer and Mercer (2001), claim that behavior includes dealing with social problems and making friends with others. In friendship relationships, positive language will enable individuals achieve their goals. In addition, lack of social skills or academic failure and frustration may affect behavior of low achievers. In addition, such students also show negative behaviors such as aggression and beating. In fact, one of the most difficult behaviors that teachers face in low achievers is frequent absence from school.

### **1.2.3 The Resource Room Program in Jordan**

Jordan is one of the developing countries that gives considerable attention to problems of low achievers in school (Al-Natour, 2008). Al-Natour (2008) claims that over the past years, the Ministry of Education in Jordan and under the Directorate of Special Education has played a significant role in supporting low achievers by providing of remedial and special education services. These services are mainly provided through resource rooms in schools that were initially established in the early nineties. These resource rooms are located within some public schools (less than 10% of the overall no of public schools) and are supposedly equipped with the necessary equipment.

According to Al-Natour (2008), resource rooms in Jordan provide special education services to 20 low achievers in each resource room, using the pull-out model. Al-Natour claims that a student is usually pulled out from his or her regular class for a period of time, varying from one to three class periods each day. The students in the resource rooms are usually taught by teachers who are trained. Hence, these teachers (i.e., resource room teachers) are the people who provide special education services. A resource room teacher basically assesses low achievers who are referred by classroom teachers for eligibility. In addition, resource room teachers in Jordan are responsible of making eligibility decisions of low achievers as well as providing them educational services. Al-Natour (2008) commented, recently the Jordanian Ministry of Education has established centers for learning resources in all educational directorates. These centers aim at improving the students' basic academic skills such as reading, writing, and computing.

Al-Natour (2008) explains that the 2006 national reform assessment recorded that about 5% of Jordanian students are low achievers in reading and writing (Ministry of Education, 2008). In 1993, the Ministry of Education has started to find appropriate mechanism to overcome problems of low achievers in schools. This represents the initial establishment of resource rooms in public schools. According to 2007 statistics, the build-up of Jordanian schools are equipped with rooms to help low achievers. The number of the resource rooms has reached 531. The number of the students who benefited from these resource-rooms' facilities reached 1260 students. Each of these classrooms contained 25 students, and they were grouped into 3 or 4 levels according to their levels of achievement in reading, writing, and mathematics (Ministry of Education, 2008). There is one specialist teacher in each resource room to practice appropriate teaching methods and conduct educational games and to assist low achievers alongside the normal classmates in reading, writing, and mathematics (Al-Natour, 2008).

Many Jordanian researchers (Al-khateep, 1995; Al-Srouer and Hussein, 1997) have conducted their studies using adapted programs such as SCAMPER and CoRT to achieve the Jordanian educational vision in improving the educational achievement of low achievers. Al-khateeb (1995) conducted a study that aimed at finding out the effect of CoRT program as a training program including three learning skills of low achievers; they are: cognition, extension and interaction. The results show that there is a difference in performance of low achievers in the Oral Torrance Inventory and its sub- directions before and after using CoRT program for these low achievers in Jordan.

Al-Srou and Hussein's (1997) study aimed at examining the effect of three parts of CoRT program on students' CT skills. The three parts are Cognitive Extension, Organization and Creativity, part of the CT development of the eighth grade students in Jordan. The results show that there is a significant difference between the control group and the experimental group in favor of the experimental group due to their training in the oral-fluency and oral flexibility parts. Moreover, the results reveal that there is no significant difference between the students (control and experimental groups) due to their training in oral-originality part. They added that that there is no significant difference between the students (control and experimental groups) due to their training in oral-originality part. The authors claimed that in spite of the significant role of thinking programs in the educational process which is also very closely related to the process of teaching thinking that has become an important issue in contemporary education, the educational process is still controlled by the traditional methods of teaching that are based on storing knowledge. The authors claimed that traditional methods are still considered the used standard to assess the students' levels. The authors added that less attention is paid to the creative approach of teaching. These results indicate that the process of teaching Jordanian low achievers is not adequate; therefore, a more recent method of teaching may motivate the students' thinking and may improve the educational output in Jordan.

Shibeeb (2000) aimed at discovering the effectiveness of cognition, organization and creativity in the students' CT skills in the Syrian Arabian Republic. The study revealed that there were statistical differences between the performance of students in the experimental group and students in the control group in favor of the experimental



group using Torrance's inventory. Besides, the study found that there are no statistical differences between students, based on their gender. Shibeeb's study found more statistical differences in the performance of the experimental and control groups according to their achievement levels in Torrance Inventory in favor of the experimental group.

On the other hand, Albadareen's (2006) study aimed at examining the effectiveness of idea-generating strategy (SCAMPER) in teaching thinking method, creative abilities and SC. His study involved a sample of 97 male and female students at the resource rooms in Jordan. The sample was divided into two groups: the control group which included 50 students, and the experimental group which included 47 students. The findings in his study indicated that there was no effect of gender variable on the total degree in measuring SC and the partial degrees of its different dimension. Besides, there was no significant effect of reaction between gender and the total degree of the measurement of SC and the partial degrees of its dimension. However,. Albadareen found out that there is a significant effect of the use of idea-generating strategy SCAMPER on measuring the creative abilities, both to its total or partial degrees of its different dimensions. The results revealed a significant effect of the idea-generating strategy SCAMPER for measuring the SC to its total degree and partial degrees of its different dimensions, except for the social dimension and the academic dimension.

Other studies (Blankenship, 1975; Meador, 1994; Camp (1994) have evaluated the impact of CT enrichment programs on SC and CT of students. The results have shown an improvement of CT but no significant changes related to SC. Sears (1963) also found that children of superior intellectual ability had higher SCs, as well as higher ability to think in original, CT ways, than children of lesser intellectual ability. Felker and Treffinger (1971) have found that students with high SC scored significantly higher than those with low SC on self-evaluation of CT and on creativity measures such as verbal fluency, flexibility, and originality. Studies of CT enrichment programs on SC and CT (Blankenship, 1975; Meador, 1994; Camp, 1994) have described the influence of SC and CT of students. The results have shown an improvement of creative thinking.

Based on the findings of the previous studies (Al-khateep, 1995; Al-Srouf and Hussein, 1997; Shabeeb's , 2000; Albadareen,2006) that new methods and programs are needed to teach Jordanian low achievers, the researcher aims at adapting a strategy-based program to examine the effectiveness of using this program in developing CT and SC of Jordanian low achievers. Consequently, this study is concerned with students in the primary schools who learn in the Jordanian resource rooms.

### **1.3 Statement of the Problem**

The world is being more complicated because of challenges that are related with speed-up information and communication technology. Success in facing these challenges does not depend on knowledge alone, but instead it depends on applying it in the right way. Helping low achievers is one of the main challenges facing educators. In

order to improve the standard of low achievers' life and enable them to solve their problems, their thinking must be increased.

According to (Swanson and Shaughnessy (1998), Al-Srouf and Hussein, (1997); Albadareen, (2006) the presently used program (CUSBM) concentrates on certain activities. The results of the above studies show that the activities in (CUSBM) in teaching Jordanian low achievers are insufficient and not relevant. These researchers reported in their findings that the activities on developing creative thinking and self-concept in the (CUSBM) are not enough, therefore, there is a need for a program that includes more activities and clearer procedures for training low achievers. The previous studies also investigated the effect of gender variable on self-concept dimension and creative thinking. The results show that gender has no effect on low achievers' creative thinking and self-concept (Albadareen, 2006).

Consequently, this study attempts to substantiate the findings of previous studies of (Al-Srouf and Hussein's, (1997) and Albadareen (2006) that ineffective training programs for teaching low achievers effect Jordanian low achievers academic performance as well as their self-concept and creative thinking. They added that teachers are still unable to instill the importance of CT to their students as well as to establish the basic theoretical foundations of the programs which can be used for teaching thinking and learning methods. They are also incapable of realizing the significance of training low achievers use certain programs that assist them to improve their CT along with developing their SC. These results indicate that training low achievers is one of the serious challenges that teachers face. Therefore it is very important to establish new

ways to help teachers to train low achievers in the Jordanian schools. Teachers should know more about the programs that can assist them to improve the low achievers' thinking strategies, SC, and CT (Sawason, et.al., 1998).

However, there are far more researchers who found that low achievers in the Jordanian schools are sourced to the teaching process as being unattractive and uninteresting (Al-Srour and Hussein's, 1997; Albadareen, 2006). These researchers also found that the activities and teaching techniques in the currently used program (CUSBM) are ineffective (Deo and Mohan, 1972; Sawason, et.al 1998). Their findings also revealed lack of pedagogical training. The question, then, is whether Jordanian low achievers in the resource rooms are affected by the kind of training they receive. The importance of creative thinking, along with, developing low achievers' SC has been confirmed by studies conducted by (Deo and Mohan, 1972; Sawason, et.al 1998, Al-Srour and Hussein's, 1997; Albadareen, 2006). Such studies also mentioned the ineffectiveness of gender variable on self-concept dimension and creative thinking Jordanian low achievers.

According to previous studies, this study, attempted to examine the level of CT and SC of Jordanian low achievers in the resource rooms. It also tried to know if there is gender variable on Jordanian low achievers' level of self-concept and creative thinking. The researcher, therefore, attempted to generate a modified a strategy-based- module (MSBM) that is based on CoRT and SCAMPER programs in order to assist teachers in training and assisting the learning of Jordanian low achievers and the effect of this MSBM on the creative thinking and self-concept of the Jordanian low achievers. The

modified a strategy-based- module tries to include differen and sufficient activities and games on developing creative thinking and self-concept of Jordanian low acheivers. It also includes procedures and techniques on how to train low achievers. These procedures and techniques motivate low achievers to acquire the required instructions to developr their creative thinking and self-concept.

Therefore, this study attempted (a) to examine if there is a significant difference between the male and female low achievers' creative thinking after being trained using the Modified Strategy-Based Module, (b) to examine if there is a significant difference between the male and female low achievers' self- concept after being trained using the Modified Strategy-Based Module (c) to examine difference between the experimental group and the control group in the creative thinking of the Jordanian low achievers (d) to examine the difference between the experimental group and the control group in the self-concept of the Jordanian low achievers ..

#### **1.4 Objectives of the Study**

This study aims at helping low achievers in resource rooms in the primary schools to develop their creative thinking and self-concepts by applying a modified strategy- based module.

1. To examine the effect of applying Modified Strategy-Based Module on the creative thinking of the Jordanian low achievers.

2. To examine if there is a significant difference between the male and female low achievers creative thinking after being trained using the Modified Strategy-Based Module.
3. To examine if there is a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of creative thinking.
4. To examine if there is a significant difference between the experimental group and the control group in the creative thinking of the Jordanian low achievers.
5. To examine the effect of applying Modified Strategy-Based Module on the self-concept of the Jordanian low achievers.
6. To examine if there is a significant difference between the male and female low achievers' self- concept after being trained using the Modified Strategy-Based Module.
7. To examine if there is a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self- concept.
8. To examine if there is a significant difference between the experimental group and the control group in the self- concept of the Jordanian low achievers.

## **1.5 Research Questions**

1. What is the effect of applying Modified Strategy-Based Module on the level of creative thinking of the Jordanian low achievers?
2. Is there a significant difference between the male and female low achievers' creative thinking after being trained using the Modified Strategy-Based Module?
3. Is there a significant interaction effect between types of teaching modules and low achievers' gender post-test scores of creative thinking?
4. Is there a significant difference on creative thinking between the experimental group and control group?
5. What is the effect of applying Modified Strategy-Based Module on the level of self-concept of the Jordanian low achievers?
6. Is there a significant difference between the male and female low achievers' self-concept after being trained using the Modified Strategy-Based Module?
7. Is there a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept?
8. Is there a significant difference on self-concept between the experimental group and control group?

## 1.6 Hypotheses

Based on these research questions, the researcher proposed to test the following hypotheses:

H<sub>01</sub>: There is no significant differences in the low achievers creative thinking mean score after being trained using the Modified Strategy-Based Module.

H<sub>02</sub>: There is no significant difference in the creative thinking mean score between the male and female low achievers' after training using the Modified Strategy-Based Module.

H<sub>03</sub>: There is no significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of creative thinking.

H<sub>04</sub>: There is no significant difference in the creative thinking mean score between the experimental group and the control group.

H<sub>05</sub>: There is no significant differences in the low achievers self-concept mean score after being trained using the Modified Strategy-Based Module.

H<sub>06</sub>: There is no significant difference in the self-concept mean score between the male and female low achievers' after training using the Modified Strategy-Based Module.

H<sub>07</sub>: There is no significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept.

H<sub>08</sub>: There is no significant difference in the self-concept mean score between the experimental group and the control group.



### **1.7 Rationale of the Study**

The topic of this study is chosen according to the following reasons: Firstly, training low achievers is a challenge for specialist of this area that needs special care. Secondly, because of the current ways (Al-Srouf & Hussein,(1997); Albadareen, (2006) of teaching Jordanian low achievers in the resource rooms, students cannot develop their level of SC and creative thinking. Thirdly, previous studies like (Al-khateep, (1995); Sawason, et.al., (1998); Shibeeb, (2000) have also emphasized a need for new and basic theoretical foundations of programs for teaching thinking and learning methods to low achievers, therefore, the researcher of this study regards this as an essential area that needs to be investigated. Finally, a combination of two programs (CoRt & SCAMPER) that includes variety of activities that require a certain amount of attention might assist low achievers academic performance.

### **1.8 Significance of the Study**

The current study provides insight on the effectiveness of a modified strategy-based module based on CoRT and SCAMPER. The significance of this study is the use of a strategy- based module that combines games from SCAMPER and CoRT in one module to develop young low achievers' CT and SC. Integrating games from SCAMPER and CoRT programs may enable Jordanian low achievers to build up positive orientations toward thinking, imagination, and creation which are learned through simplifying meanings, exploiting available possibilities, and developing imagination, especially the creative imagination. This can be acquired through practicing styles of generating thoughts included in SCAMPER games and activities.

This use of modified strategy-based module might improve the CT and SC of Jordanian low achievers. It may also provide useful information to educationist to use appropriate strategies to teach low achievers. It may form appropriate and easy educational material that permits low achievers to achieve certain mental educational activities. It is hoped that teaching thinking at an earlier age stage may produce better results than that at a late stage.

Therefore, interactions of this kind of teaching module may influence and raise the rate of progress of learning. Using activities of two programs that combines a comprehensive description and instructions for teaching low achievers may provide adequate and sufficient training which might not be provided by using only activities of one program. At this point, one can say, that a much more interesting type of interaction and performance occur when learning is influenced by using a variety of activities and tasks that might provide a useful interpretation that develops low achievers' CT and SC.

## **1.9 Definitions of Terms**

**SCAMPER Program:** is used to produce original ideas. It is a creative process that thrives on preparation, concentration, incubation, illumination, and verification. It emphasizes fruitful application which depends on the existence of an enabling environment (Bob Eber1997).

**CoRT Program:** is a program based on the belief that thinking is a skill which can be acquired in a direct way. The program depends on using the means as a thinking teaching strategy, and it is designed to present thinking skills through a group of practical instruments (De Bono, 1988).

**Creative Thinking:** is generating alternative ideas, practices, and solutions that are unique and effective, and exploring ways to confront complex, messy, ambiguous problems, make new connections, and see how things could be otherwise measured by using to test Torrance Test of CT which was adapted by the researcher to fit the Jordanian environment. Creativity concerned with a complex mix of motivational conditions, personality factors, environmental conditions, chance factors, and even products.” (Feldhusen and Goh, 1995).

**Self-Concept:** is usually related to a person’s perception of him/herself. It is often defined by self-description measured by using to test Piers-Harris2 SC scale which was adapted by the researcher to fit the Jordanian environment. A self-concept is a collection of beliefs about one's own nature, unique qualities, and typical behavior. Your self-concept is your mental picture of yourself. It is a collection of self-perceptions. For example, a self-concept might include such beliefs as 'I am easygoing' or 'I am pretty' or 'I am hardworking (Weiten, Dunn, & Hammer, 2012).

**Low Achievers:** are those students who are learning in the Jordanian Resource Rooms at the government schools of the Jordanian Ministry of Education and who have low academic performance according to their results in the following subjects: Arabic,

Mathematics and Mental Ability Test. The term refers to a child who has low academic achievement and who is facing difficulties in reading, language learning, and writing. They are those students who have low achievement in school. Their average score, ranges between 50 and 60 percent. These students are mostly transferred to the resource rooms.

**Modified Strategy- Based Module:** The module is adapted by the researcher based on CoRT and SCAMPER Programs. Particularly it comprises 20 lessons selected from CoRT1 and CoRT4 and games of SCAMPER which includes drills and activities. It is adapted for low achievers in the sixth grade in Jordan. A teacher guide which includes the techniques, activities and instruments is provided to help the teacher teach the low achievers, for the purpose of improving the students' level of CT and their level of SC. This module will be used for the experimental group.

**Currently Used Strategy- Based Module:** is an educational program which is designed by the Jordanian Ministry of Education in the year,(2010-2011 for sixth grade primary school. This program is taught by the teachers according to the plan designed by the Ministry of Education.

### **1.10 Conceptual Framework**

The conceptual framework that supports this study is based on SCAMPER and CoRT programs. CoRT program is based on the belief that thinking is a skill which can be acquired in a direct way. The program depends on using the means as a thinking teaching strategy, and it is designed to present thinking skills by using a group of

practical instruments. Students are trained to use these practical instruments in various situations. Various training opportunities are needed for students to apply these instruments in order to develop their thinking skills. CoRT program has been developed by Edward de Bono in (1971). It consists of six teaching components (CoRT1 - CoRT6) that cover many thinking aspects. The components of CoRT program are as follows: (a) breadth”. It refers to students-thinking - training of all aspects of a situation in whatever available method(s). This unit is concerned with the results of each test in comparison with the achieved objectives. In this regard, De Bono suggests that this unit should be taught at the beginning of the program whereas the other units can be taught later; (b) organization focuses effectively on a situation and directs the students' attention towards this situation in an organized way; (c) interaction is concerned with the issues that relate to some necessary logical evidence; (d) creativity includes a number of strategies that should be used to create, evaluate and/or review thoughts; (e) feelings and Information” are concerned with the factors of excitement that influence the process of thinking and (f) presents action which includes a general frame for getting problem solutions by connecting the strategies that presented in previous lessons or in a separate way.

This study uses a modified strategy- based module which is derived from the combination of the aspects in SCAMPER program and aspects in CoRT program. For the purpose of this study, two components will be used (CoRT 1 and CoRT4) because the aspects that should be investigated and displayed in this framework are: the level of CT and the level of SC. On the level of creative thinking, it investigates three dimensions that is (a) Fluency (b) Flexibility(c) Originality. On the level of SC, the study investigates six dimensions such as (a) Behavior (BEH) (b) Intellectual and school

(INT), (c) Physical Appearance and attributes (PHY) (d) Anxiety (FRE) (e) Popularity (POP) (f) Happiness and Satisfaction (HAP) of low academic performance. Each dimension includes 10 lessons. Each lesson includes activities and drills that should be taught for 45 minutes. Lessons of CoRT1 are: (a) PMI: The Treatment of Ideas, (b) CAF: The Factors Involved, (c) Rules or laws (d) C&S: Consideration of the immediate, (e) AGO: picking and defining Objectives, (f) Planning the basic features and process, (g) FIP, choosing from a number and (h) APC: Generating new Alternatives and choices, (i) Decisions and (j) OPV: Other Peoples View. Lessons of CoRT4 includes the followings: (a) Yes, No and Po, (b) Stepping Stone, (c) Random Input(d) Concept Challenge, (e) Dominant Idea, (f) Defining the Problem, (g) Removal Faults, (h)Combination, (i) Requirements (j) Evaluation.

SCAMPER program which is the second program that is integrated in the conceptual framework has been developed by Bob Eberle (1997). It includes various games that enable students to improve their creative thinking. The SCAMPER technique, for one, uses a set of directed, idea spurring questions to suggest some addition to, or modification of something that already exists. It has also received much attention as a learning tool that fosters awareness, drive, fluency, flexibility, and originality. The stimulus comes from being asked to answer queries that one would not normally pose. SCAMPER stands for:

- S: Substitute (e.g., components, materials, people)
- C: Combine (e.g., mixes, combine with other assemblies or services, and integrate)
- A: Adapt (e.g., alter, change function, use part of another element)

- M: Magnify/Modify (e.g., increase or reduce in scale, change shape, modify attributes)
- P: Put to other uses
- E: Eliminate (e.g., remove elements, simplify, reduce to core functionality)
- R: Rearrange/Reverse (e.g., turn inside out or upside down).

For this study, the components derived from the SCAMPER program include ten games. The games are: (a) Eighth day of Week, (d) Sight and Sounds, (c) Upside Down and All Around, (d) Brown Paper Bags, (e) Dogs and Cats, (f) Mind shower, (g) Leap Before you look, (h) Oops!, Room for the Future, (i) Handy Randy, (j) the Space Age Robot and 2070 Script writer. Each game includes three drills.

Based on the aspects of the two programs, the researcher advanced a framework that integrates the two programs and came out with a modified strategy-based module. The modified strategy-based module in this study will be applied for low achievers in Jordan (have low academic performance) to measure and improve their level of SC and their level of CT in order to develop their low academic performance. The procedures of modification and validation of the strategy module showed the way to format the conceptual framework of this study. In the Modified Strategy-Based Module the characteristics include: guided practices based on solved examples and drills followed by a home work sheet. Figure 1.1 displays the conceptual framework of this study.

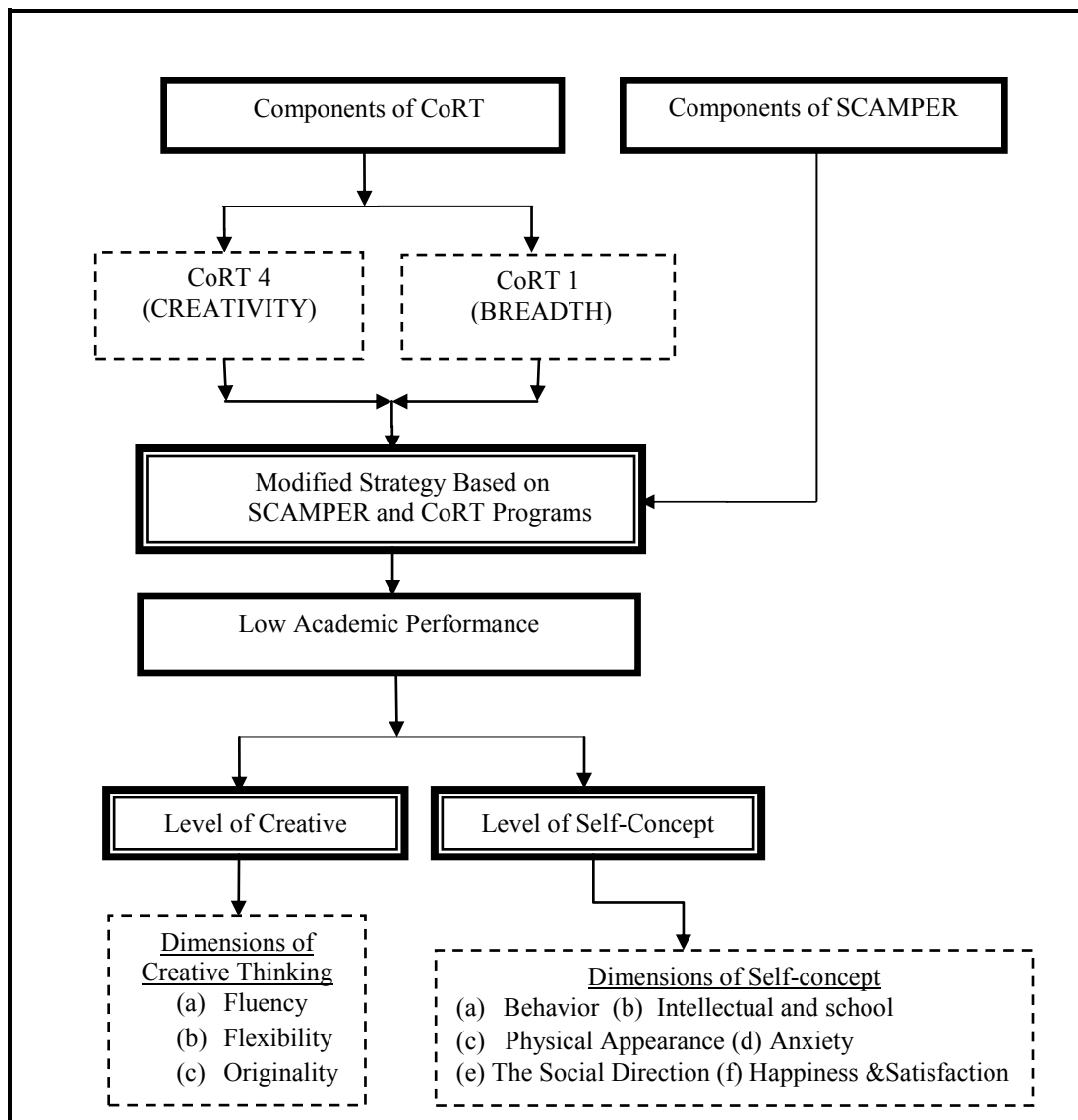


Figure 1.1: Conceptual Framework



### **1.11 Limitation of the Study**

The recent research is limited by the following:

- (a) Using a modified strategy-based module. Particularly, it attempts to examine the effect of strategy- based module in developing the level of CT and the level of SC of low achievers.
- (b) Duration of this experiment is for one semester.
- (c) It is limited to low achiever students in the sixth grade in 21 resource rooms at Al-Mafraq governorate in Jordan. Therefore, the results from this study cannot be generalized for other students. The sample selected will be divided into four groups: Two control groups which will be taught by the current method of teaching and two experimental groups which will be taught by the modified strategy-based module. Each Lesson will be taught for 45 minutes.

### **1.12 Conclusions**

This Chapter provides introduction, background information and statement of the problem, objectives, hypothesis, research questions and definitions. It also discusses the rational, significance and limitations of the study. It also elicits the conceptual frame work of the study.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter introduces the review of the theoretical background. It includes a general presentation of Low Achievers, Creative Thinking (CT), Self-Concept (SC) and definitions of CoRT Program and SCAMPER Program. It also provides a review of some studies related to the scope of this study.

#### **2.2 Theoretical Framework**

Learning difficulties of low achievers' theorists and researchers, (1996a Alrousan, 2011; Pearl & Bay, 1999 Mercer and Mercer, A 2001; De Bono, 1998) defined low achievers as children who had difficulties in reading and writing. They also described low achievers as children who have problems of attention and additional activities. Consequently, the methodology that used in this study is drawn from CoRT and SCAMPER programs. These programs according to De Bono, (1998).are essential in raising the level of Creative Thinking (CT), Self-Concept (SC) of low achievers. The focus of this study is on low achievers, creative thinking (CT) and self-concept (SC). Mercer, C and Mercer, A (2001) agree that low achievers performance might be affected by their social skills' disability and/or their academic inability. According to these authors, developing cognitive features, behavioral characteristic features, interaction of distinctive features and motivation might improve the low acheivers' Creative Thinking (CT), Self-Concept (SC). According to Mercer, C and Mercer, A (2001), poor Creative Thinking (CT), and poor Self-Concept (SC) causes poor

academic performance of low achievers. The details are explained in the following section.

### **2.2.1. Low Achievers**

Low Achievers refers to children who have low academic achievement and are facing low performance difficulties in reading, language learning, and writing (Alrousan, 2011. p201). low-achieving students to compare between the effects of two epistemic/cognitive programs applied in teaching thinking and SC for low-achievers students, and other talented low-achieving students (Swanson and Cooney and Shaujhnessy 1998). A class of low achievers is considered different as compared with other regular student classes. It is an isolated class which is devoted to control students who individually face different learning difficulties in one or more subjects such as mathematics, reading, comprehension and so on. What is worth mentioning in this respect is that unfamiliarity and differences are found among the low achievers as individuals. For example, student whose reading ability is good can be very poor in writing and so on (Pearl & Bay, 1999).

A class of low achievers is considered different as compared with other regular student classes. It is an isolated class which is devoted to contain students who individually face different learning difficulties in one or more subjects such as mathematics, reading, comprehension and so on. What is worth mentioning in this respect is that unfamiliarity and individual differences may be found in the individual student himself or herself. However, (Pearl and Bay, 1999) believe that students in such classes share some common features such as:

### *(1) Cognitive Features*

- (a) Weakness in academic achievement: Weakness occurs in one or more academic subjects. The difficulties of language and reading are the most common ones; and because of the high connection between language skills and academic functions, it is even more difficult to determine which is more problematic for the child, language or reading.
- (b) Problems of attention and additional activities: Low achievers usually pay attention to the stimulus, which is irrelevant to the subject. This means that there is a problem in selecting the stimulus (shape and background) which was previously referred to as Attention Deficit Disorder (ADD). Along with the increasing concentration on this situation, the term is changed to Attention Deficit and Hyperactive Disorder (ADHD) (Mercer and Mercer, A 2001). Besides, this disorder can be categorized Hyperactive Disorder Common Attention Defect and the combination of Hyperactive Disorder and Attention Defect. Among the three, attention difficulties and the hyperactive problems are the most distinctive features of low achievers.

### *(2) Interaction of Distinctive Features*

- (a) Weakness in social skills: weakness here is related to problems of appreciating other people, accepting criticism, the ability of giving positive feedback, greeting others, feelings exchange and the ability of saying "NO". One reason for such social problems is the misunderstanding of the social principles, norms and traditions.

Generally, the social competency of these students is weak because of their disability to positively interact with their colleagues and teachers.

- (b) Weakness in base-concept: Many low achievers have negative feelings towards themselves because of their unsuccessful and weak academic achievement. Low achieving students may not have lower SC in non-academic situations like the family interactions, physical or social aspects of development.
- (c) Low motivation: When low achievers feel that they will not succeed, they face problem of failure. When this is so, their motivation will decrease and they will lose their feelings of happiness since they believe that success is connected with external factors that are beyond their capabilities. This lack of motivation happens mainly due to lack of physical and psychological abilities.
- (d) Disordered Mood: Low achievers have levels of worry, fear, sensitivity, isolation and pressured feelings much higher than those of their normal peers.

### *(3) Behavioral Characteristic Features*

Behavior is not only influenced by the academic achievement but also by society and environment as well. Behavior is an operation by which individuals organize their lives using positive, flexible and biological approaches in order to confront the various requirements of life. Behavior refers to the manner of dealing with social problems,

making social relationships with other people and using practical and productive language that assist them act properly.

According to Mercer, C and Mercer, A (2001) stated that the behavior of low achievers might be affected by their social skills' disability and/or their academic inability. Sometimes, low achievers may show some negative or unacceptable behaviors, such as abusive behavior, attacking other student's irrespective of age and gender, insulting others and other difficult behaviors mostly to teachers, which is their reiterative absence. Some may reflect other kinds of behavior like shyness and withdrawal, which are seen among normal students. This may be a result of failure in previous interaction with others, or a lack of self-confidence due to their academic weakness. Some of these students live in isolation and have no interest to participate in any of teamwork activities, leading to a state of sadness and isolation especially if they are not treated educationally.

(4) *Other Characteristic Features:* These features refer to dependency, hyperactivity, and language problems: (Mercer, C and Mercer, A 2001).

### **2.3 Creative Thinking**

One of the earliest models of the creative process is attributed to Graham Wallas. Wallas (1926) proposed that creative thinking proceeds through four phases.

The Wallas Model for the Process of Creativity includes the following:

- (a) Preparation (definition of issue, observation, and study)
- (b) Incubation (laying the issue aside for a time)
- (c) Illumination (the moment when a new idea finally emerges)

(d) Verification (checking it out).

Torrance (1988) asserts that Wallas' model is the basis for most of the creative thinking training programs available today. The inclusion of incubation followed by sudden illumination in this popular model may explain why so many people view creative thinking as a subconscious mental process that cannot be directed. The notion that creative thinking begins with purposeful preparation and ends with critical verification suggests that creative and analytical thinking are complementary, rather than opposing. Creative thinkers study and analyze, but they have trained their perception mechanisms to notice things that others miss. Creative thinkers verify and judge, but they expect surprises and avoid judging prematurely. The implied theory behind Wallas' model -- that creative thinking is a subconscious process that cannot be directed, and that creative and analytical thinking are complementary -- is reflected to varying degrees in other models of creativity.

One set of models relies heavily on the theory of subconscious mental processes and uncontrollable events. For example, Campbell (1960) and Simonton (1988) propose that creative ideas emerge from a largely uncontrollable Darwinian process of random variation and natural selection. The basic idea behind what they call the "chance configuration theory" dates back to the 1880s and the writings of psychologist William James. Specifically, the chance configuration model suggests that variations on ideas and concepts come about through random chance. For example, random factors accounted for the mold that killed Alexander Fleming's laboratory bacteria cultures, leading to the discovery of penicillin. Similarly, random factors are also behind the sticker burrs that attached themselves to your pants leg during a walk in the woods.

The creative process involves purposeful analysis, imaginative idea generation, and critical evaluation -- the total creative process is a balance of imagination and analysis. Older models tend to imply that creative ideas result from subconscious processes, largely outside the control of the thinker. Modern models tend to imply purposeful generation of new ideas, under the direct control of the thinker. The total creative process requires a drive to action and the implementation of ideas. We must do more than simply imagine new things; we must work to make them concrete realities.

CT coincides with the level of synthesis in the cognitive domain on Bloom's Taxonomy of Educational Objectives. For example, Fogarty and McTighe (1993, p. 163) defined CT as a form of higher order cognition. The authors stated that CT entails generative and productive thinking. It is also described by (Angelo & Cross, 1993, p. 181; Starko, 2005, p. 5) as a way of connecting the new with the familiar to generate ideas and products that are both original and useful.

Woolfolk (1998) thinks that giving attention to CT and cognitive creativity of students should be the most important educational target in solving problems of low achievers. Highly creative students have not been given an assessment level that meets their abilities. In fact, studying experiences given to them do not correspond except to some parts of their abilities.

It seems a must to discover the CT of these students. In this respect, (De Bono, 1995) emphasizes the fact that the human brain has not been used in its best abilities yet. Highly developed societies have recognized this fact and have started exploring the



human brain abilities CT of individuals have been used in many approaches which have increased the competence of the human brain.

### **2.3.1 Approaches of Creative Development**

There are many approaches that can be used in the process of developing human creativity and CT. They are as follows:

#### **(1) Imagination**

Studies prove that imagination is one of the most important approaches used in the development of CT. It is found to be as the most effective approach since it concentrates on preparing the environmental circumstances that encourage individuals to imagine. Moreover, it helps them to direct their imagination towards solving their life problematic situations. Consequently, the ability of the individual will be developed to recognize and confront such difficult situations and problems. Eventually they would be able to think of available solutions to solve any faced complication. This motivates students to imagine what may happen to them in the future. In this approach, the individual is the one who performs and thinks of imagery visions that have not been formed or created before. This is referred to as "Creative Imagination". Nevertheless, the individual may remember cognitive visions that have been created by other people; and this is known as 'Traditional Imagination' ( Decety, 2004).

## **2) Creation of Thoughts**

This approach is one of the choral activities that is preferred to be used inside the classroom. The intentions of this approach many include creating and organizing thoughts, solving problems and increasing the cognitive operations ( Decety, 2004). The approach is characterized with the following features:

- (a) Criticism is not permitted.
- (b) Postponing issuing thoughts judgments.
- (c) Freedom of using strange thoughts.
- (d) Construction depending on these thoughts.
- (e) The quantity of required thinking.

### **2 .3.2 Skills of Creative Thinking**

In spite of arguing about defining the nature of creativity and CT, most of the researchers (De Bono 1995; Hanoorah, 2003) agree that the most important CT skills and abilities are:

- (1) Fluency
- (2) Flexibility
- (3) Originality
- (4) Sensitivity of the problems
- (5) Adding details

Below is a detailed presentation of each of these skills:

## **(1) Fluency**

Fluency depends on the individual's ability of presenting more words or thoughts/ideas, or painting pictures/shapes. The feature of 'quantity' is the scale of giving the score. The more the individual can produce as many thoughts/ideas as possible in a specific time, the higher the degree of 'fluency' he achieves. As a skill, fluency is of four types. They are as follows:

- (a) Fluency of Pronunciation: This is the ability used to produce much more pronunciations with certain characteristics and conditions.
- (b) Fluency of Meanings: This skill is used according to certain interpretations of meanings.
- (c) Fluency of Thoughts: This is the skill used to produce as many thoughts as possible in a specified time. The thought may be simple as a single word, or it may be complicated or comprehensive such as a title of a picture or a sentence that gives coherent thoughts.
- (d) Fluency of Expression: This skill is related to whether the construction of sentences is easy or not. It is used for fast thinking and for words which are familiarly connected to be suitable for certain situations; however, it is forbidden to use one word twice (Hanoorah, 2003).

## **(2) Flexibility**

Flexibility is the individual ability to immediately produce a variety of responses appropriate for a problem or a certain situation. In other words, it is the ability of creating various thoughts. It changes the direction of thinking according to the changes of the stimulus (Al-Zayat1997). According to author, there are two kinds of flexibility:

- (a) Adaptive Flexibility: This is the ability of the individual to change his cognitive destination in a situation of solving problems. This skill can be considered a positive aspect of adaptive cognition because the flexible individual with adaptive cognition is opposite to the inflexible one.
- (b) Spontaneous Flexibility: It is the skill of producing as many possible thoughts which are related to such a situation determined by the test as possible, but the thoughts of this situation should be various, unexpected and able to change the destination of thinking. This ability is measured by testing the uncommon usages of a certain thing like using the newspaper in many usages other than reading .

## **(3) Originality**

Originality is considered one of the most important skills necessary in producing creativity. It is the main characteristic associated with creation and CT. Originality refers to 'ORIGIN'; i.e., when the vision/thought/idea is original, it means that this vision/thought/idea has not been achieved before. Many researchers think that a thought is 'original' only when it is presented for the first time and no one has achieved it before. Many supporters of human and environmental directions adopt the individual's previous experiences as a major base for judging the quality of his/her productions. This means

that 'originality' is not an absolute characteristic but rather a specific feature in the frame of the individual's own experience (Jarawan, 2002).

#### **(4) Sensitivity**

It is the skill of discovering the problem and investigating the shortage of its information. This means that some individuals are faster than others in recognizing the problem and investigating its existence in the situation. The discovery of a problem is undoubtedly the first step in the process of looking for a solution to this problem. Observing abnormal, irregular or confusing things in the individual's surrounding environment is closely related with this skill since it aims at using them once again but in a normal way (Al-Heela, 2002).

#### **(5) Elaboration**

Elaboration means the individual's ability to create additions or new details regarding one thought in such a way that enriches it and makes it suitable to be applied. This CT implies presenting various and multiple details for things. For example, expanding a brief thought, clarifying a short strategy, explaining a difficult subject, or re-writing a text by adding new aesthetic expressions (Katami and, Nayefeh 1996). It is not easy to acquire any skill of CT merely through reading about it. To develop such a kind of skill, one should keep on training (De Bono 1995).

As this study aims to investigate the level of CT and SC of Jordanian low achievers, these students are learning in the Jordanian resource rooms. Such students are supposed to have suitable training to develop their level of CT and SC. To elaborate

further, one should look at the fact that when such students learn in resource rooms should have an efficient training to develop their CT and SC as suggested by (De Bono 1995). The students should develop their ability of creating various thoughts, solving problems and increasing the cognitive operations. However, several researchers have felt the need to emphasise that effective training of low achievers requires giving attention to important CT skills and abilities in solving problems ( Woolfolk 1998; Angelo & Cross, 1993 ; Starko, 2005 ).

#### **2. 4 Low Achievers and Creative Thinking**

Jarawan (2002) explained that development of student's ability in thinking is considered one main target for educationalists to achieve in order to help students effectively deal with their present and future life's problems. The process of thinking for students resembles the process of breathing for human beings. Teaching thinking skills has recently become of urgent need due to the huge piles of recent knowledge. Such skills supply us with the necessary means to manage the huge quantity of sustainable knowledge at the present time. Jarawan, says that currently, most countries pay much attention to increase criteria of their educational systems. They concentrate on teaching the basic skills although these skills are not enough to meet the needs of the market. Therefore, focusing on thinking skills has become an urgent necessity due to the following reasons:

- (1) The individual's inability to keep huge quantity of information in his brain in order to memorize them for future use.
- (2) The expansion of knowledge.

- (3) The modern society requires an active citizen who can perform his/her job in a way that differs from machines.

The new challenge of developing the educational and learning curricula depends on presenting a program of teaching thinking to all individuals and not only for those who are in the high-level classes (Larson, 2002). Recently, there has been an increase in the programs of thinking teaching for both talented and normal students. On the other hand, less attention has been paid to such programs which are devoted to students with special needs in general and to low-achiever - students in particular. This is due to the fact that, educationally speaking, there is a dominant belief that students who are low achievers need to be skilful in basic skills only such as reading and writing rather than in thinking. This means that teaching thinking is not given a priority in the field of special education (Rottman and Cross, 1990; Leshowitz and Jenkins, 1993; Lafrance, 1995).

It is concluded that the challenge facing special education is including higher order thinking skills in the curricula of students with special needs. Teachers of special education are seriously facing this challenge now, because it is already perceived that their students have to struggle to acquire the normal curricula. Hence, it will be very difficult for them to include thinking skills in the curricula (Douglas, 1991). Low achieving students are already considered the poorest of all learning students, thus, for them, to learn strategies of thinking while it is difficult for them to apply effective strategies of thinking to learn like normal students would really be farfetched. However, if these strategies are presented and used in an appropriate approach, or if the current strategies are replaced with some new effective ones, such students will be able to use

them. It is believed that one of the most important reasons of the problems that relate to learning reading is that low achieving students are facing problems in the process of information management (Swanson and Cooney and Shaughnessy 1998).

Rottman and Cross (1990) stated that low achievers are unable to adopt and use the strategies of thinking in the same way that normal students usually do because the former lack the skill of self-control; and consequently, they need to learn how to use thinking strategies to help them improve their comprehension and work on transferring the influence of training to new situations. With proper strategies of thinking, it has become necessary to present creative experiences for such students in a multi-sensed frame because creativity is connected to this and not merely a matter of intelligence, praising and adopting to the environment. It is rather the function of the soul/spirit of every individual. The ability of creativity is considered of great importance since it increases the individual's feeling of satisfaction and decreases the feeling of failure so it provides the individual with a positive feeling towards himself and towards his performance in life.

Jeel (2002) argued that CT of low achieving students is not recognized, and eventually will be difficult to develop. Providing such children with creative experiences will help them be mature and gain success in their real life. The teacher is responsible for establishing creative experiences for these children. For this purpose, he/she should put this to a daily program as part of their school life



The main reason why low achievers suffer in their academic problems is their failure in reflecting their knowledge operations rather than the disorder of these operations. This means that knowledge operations should physiologically be working in a proper way, whereas the defect seen is that they are unable to employ these operations normally. It is worth mentioning here that studies have shown that great success has already been achieved in training low achieving students in Specific Knowledge Strategies. Ellis, (cited in Scruggs and Mastropieri, 1993) for example, carries out an operation where he employs four thinking strategies in the curricula of low-achiever-students. These strategies are:

- (1) Orienting Process (Focusing Process): The teacher clarifies the strategy that will be used for students in order to facilitate the process of teaching
- (2) Framing Process (Forming Process): The teacher clarifies how this strategy will be used in learning a certain skill.
- (3) Applying Process: Here students apply the strategy separately.
- (4) Generalization process: The student learns how to generalize the knowledge strategies that he mastered to solve similar problems In another study by Shondrick, 1992 on a sample of 46 third and fourth grade students of low achievers and another group of 46 normal students, the researchers found that, in the creativity test, the ability of problem solving and the test on deductive thinking, the performances of low achieving students are less than those of normal students. This indicates that these students are in need of learning skills of thinking to promote and improve their academic life.

According to Swanson et al. (1998), low achievers are a group of special-education- students who need to learn special thinking strategies because they, unlike normal students, do not have the ability to use effective thinking strategies although they have the ability to learn these strategies if presented to them appropriately, or if they are replaced by more effective strategies

Jarawan (2002) said that teaching low achievers' CT is one of the major objectives that educationalists aim to achieve in order to make these students have the ability to confront present and future problems interactively. For human beings, the process of thinking is as important as breath, in the sense that they cannot live without it at all. Teaching thinking skills has become a necessary instrument to understand and manage the huge, extensive and sustainable knowledge that the present world achieved (Jarawan, 2002).

It has become necessary to teach CT by providing low achievers with creative skills and experiences through using the Multi-Senses Input Strategy. This refers to the fact that creativity does not depend only on talent, family bringing-up and environment, but on the individual's Self- Function as well. Creativity is a significant ability of individuals since it provides them with self-satisfaction, and reduces their self-disappointment. It also helps them build up positive attitudes towards themselves as well as their behavior in life (Jiljil, 2002). CT that completes the Multi-Senses Input Strategy can improve children's motivation and SC which should be seriously taken into consideration. The aspects of CT help children improve their learning, and accelerate the process of Learning Treatment of low achievers since they focus on the integrity of

Brain Functions. Furthermore, CT has become very significant in resolving complicated problems and improving the feelings of SC among low achievers (Lefrance 2002).

Swartz and Kiser (1999) discussed the possibility of teaching thinking to low achievers in mixed classrooms. They maintain that each student has a unique characteristic different from other students and that all students have the ability to think. Furthermore, they claim that applying thinking skills in mixed classrooms may help the teacher to gradually make some necessary modifications in the curriculum in order to suit the abilities of low achievers in a way that will enable them to participate interactively. The two researchers call this process "Streamline Process". This process is followed by another stage called "Diversification Process" in which the teacher develops a bag for thinking instruments that contains various groups of exercises which can meet the needs of low achievers.

#### **2.4.1 Studies Related to Creative Thinking and Low Achievers**

In 1993, Leshowitz & Jenkins conducted a study aiming at teaching low achievers critical thinking skills. The sample of their study consisted of 55 low achieving students in the intermediate and high schools of Arizona. These students used to partially study at private education classes. They were categorized as having learning difficulties in accordance with Arizona criteria which included students of academic or cognitive inability who were at risk, and whose intelligence average ranged from 85-110. The students were distributed in an experimental group of 22 students and a control group of 33 students. The researchers used a program that included scientific reasoning skills. The program consisted of 25 lessons. The period of each lesson was 54 minutes.

The researcher developed two tools in conducting his study. The first tool was a newspaper article followed by thinking inhibition .The second was a summarized article followed by treatment method or identification of group. These students in the study acquired critical thinking skills better than their peers in the control group which received regular education The researchers indicated that the level of performance of students with learning difficulty in thinking skills became equal to their peers and even more in some critical thinking skills such as scientific deduction.

In his study, Lefrance (1995) aimed to compare the performance of normal talented students and other talented students with low achievement as far as CT skills are concerned. The sample of the study consisted of (90) students distributed into three equal groups of 30 students each. The subjects are fifth and eighth grade students whose ages range from 9-14 years. First, the researcher applied Tyco tool to carry out his study, and then he turned to MANOVA in order to analyze the results. The findings of his study proved the following:

- (1) There was no difference between the three groups in terms of their performance on originality skill.
- (2) The performance of students with low achievement was better than the performance of the other two groups in terms of intuition skill.
- ) 3( Talented students on the other two groups are excellent in terms of creative expression skill.
- (4) There is a weakness in students with low achievement in terms of giving creative titles to illustrated stories.

- (5) Students with low achievement have the ability of internal visualization but their expression of movement in drawing is rather weak.

Another study done by Olenchak (1995) examined the effect of high structured enrichment program on the development of CT and SC. The program was applied to a sample which consisted of 108 talented students with low achievement. The students were fourth, fifth and sixth graders. The study was carried out for one year and the following conclusions were deducted:

- (1) There is a statistically-significant effect of the enrichment program on improving orientations towards school.
- (2) There is a statistically-significant effect of the enrichment program on improving SC of the study sample.
- (3) There is a statistically- significant effect of the enrichment program on improving the creative productivity of the study sample.

The study of Olenchak, (1995) aimed at developing CT skills of normal students and students with low achievement. The researcher applied CoRT program of teaching thinking on a sample of (15) students with low achievement and (15) normal elementary students in Australia. The researcher used CT, academic, achievement and pre–post tests before appealing to ANCOVA tools to analyze the results. The results showed that:

- (1) There was a statistically- significant effect of CoRT program on improving CT of both groups (normal students and students with low achievement).

- (2) The increase in the CT of student with low achievement does not lead to any improvement in their academic performance as emphasized by Ritchie (1999).

The study of Al-Umari, (2006) focused on investigating the activity of a thinking program of Islamic education on improving CT and learning of students of seventh basic grade in Jordan. It also studied students' attitudes/orientations toward the program. The sample of in the study included 116 male and female students. They were divided into three groups; one as control with (40) students; and two experimental groups with (38) students for each. The first experimental group studied the subject of Jurisprudence (Fiqh) by the method of computerized co-operative learning. The second studied the educational material itself by the method of individual computerized learning. To achieve the goals of her study, the researcher applied a number of verified true and reliable tools which were educational software, a test of learning, and Laurence Test of CT. The results proved that there were differences with statistical indications in learning and CT for the benefit of the students who applied a thinking program.

A study conducted by (Marlo, 2009), examined the CT of interior design graduate students in an online learning community. The study considered potential changes in CT (fluency, flexibility, originality, and elaboration) about design research resulting from peer-led online discussions. It further studied the learner characteristics of personal motivation and domain-relevant skills as predictors of CT in interior design graduate students. Twenty one students from three interior design graduate programs across the United States are used as participants.. These students participated in online

discussions on the design scholar website for six-weeks during the fall of 2008. Personal motivation was assessed with a standardized instrument, the Work Preference Inventory, and domain-relevant skills were evaluated with a locally developed instrument. The information from these surveys was compared with pre and post-test essay measures that assessed CT and the dimensions of CT; (fluency, flexibility, originality, and elaboration). The findings suggest that the use of peer discussions in an online learning community like Design scholar can increase the CT. It also found that intrinsic motivation positively influenced.

In 2007, Al-Musa conducted a study to measure the effect of applying an educational program on improving CT of pre-school 4-6 year children in the Kingdom of Arabia Saudi. The study was applied on 33 children at Wahat-Al-Elm schools. The children were exposed to Torrens Test of CT (B) prior to the application of the multimedia educational program. The study concluded that there were differences with statistical indications (as regards fluency, flexibility, and originality) attributed to the educational program itself.

Al-sulaiman (2009) aimed to investigate cultural influence on CT abilities. This study reviewed pertinent studies in this area to provide an answer for the following questions: Are there any differences in the development of creative abilities of individuals across cultures? Are there any differences between samples taken from different countries regarding creative abilities (i.e. originality, flexibility, fluency)? Are there differences between males and females in CT abilities across cultural studies? What kind of CT measurements can differentiate the creative abilities among cross-

cultural samples? Based on a review of various studies, results indicated that cultural factors strongly influence the abilities of CT. From the results of related studies, implications and recommendations for further research are suggested.

Ali's study (2010) aimed at finding out the effect of a training program, based on a Renzulli enriching model, on developing the flow of ideas among superior/excelling students. The study was applied on a sample of 100 students of ANRWA in Jordan. The students were divided into two groups: control and experimental. Three tools were used to conduct that study: a measure of estimating the behavioral characteristics of superior students, a measure of the flow of creative thoughts, and a measure of emotional intelligence. The results indicated evident statistical differences between the two groups' members in benefit of the experimental as it concerns the measure of the flow of creative thoughts.

To summarise , studies related to creative thinking and Low Achievers reported the effect of applying an educational program on improving CT. The results also proved that there were differences with statistical indications in learning and CT for the benefit of the students who applied a thinking program. Research findings provided by the previous studies show that changes made to instruction are needed.

## **2.5 Self-Concept**

Theories of self-concept have been an interest to many psycholinguists and educationist since the beginning of the previous century (Cooley, 1902; James, 1892). In the 1960s, affective education program designed to enhance self-images of children



were engaged. The conception of these programs was influenced by the humanistic movement which focused on the importance of healthy mental development (Marlow,1968; Rogers,1961). Educators returned to emphasis on the cognitive and behavioral aspects of the curriculum (Harter, 1986). It was only in the 1980s that researchers started to develop theoretical models, appropriate instruments, and research studies to obtain consistent findings about self-concept (Zhang, 1995). The absence of a clear, concise and universally accepted definition of self-concept is still a challenge for researchers (Byrne,1996;March and Craven,1997). For example, James (1892) defends the idea that one's self-concept develops in terms of cognitive process in which individuals assess their success against the exceptions they hold for themselves.

Self- Concept (SC) according to Dawood and Hamdi (1997) is regarded as one of the most important constituents of personality (Dawood and Hamdi, 1997). It represents one basic element in Karl Rogers' Human Personality Theory. SC is the image that a person formed about himself in terms of his physical, mental, and behavioral characteristics. The image of the person about himself is the product of social factors that begin in his early childhood such as the way his parents treat him, the good and bad things they say about him and their daily and continuous evaluation of all his conducts, all of which accumulate to form the image of his personality in the future.

According to Dawood and Hamdi, (1997) SC comes in two forms: ideal SC, and cognitive SC. The first is the image an individual strives to obtain; the second refers to the level of self-satisfaction. It is worth noting that SC develops via the experiences a person goes through and the attitude he adopts in his environment during the stage of

childhood. The development of SC is closely related to the development of mental planning, and vice versa. In his theory, Piaget refers to this as self-centralization (Burns, 1982). In this aspect, it is found that school experience plays an important role in the formation of SC. Through attitudes, school experience and relationships with teachers and colleagues, the student begins to form a new image, or to reconsider his own image about his physical and mental capabilities, and his social characteristics. Therefore, SC is a strong indicator of academic success. It is noticed that successful students have a positive image about themselves, whereas students who fail have a negative one, and usually suffer from different social and behavioral problems.

The term SC refers to a person's self-perceptions formed through their experience and interpretation of their environment. It is influenced by evaluations of their own behavior, and it includes feelings of self-confidence, self-worth, self-acceptance, competence, and ability. Marsh, (2007) emphasizes the multidimensional and hierarchical nature of SC. According to Marsh, this multidimensional, hierarchical model of SC postulates general SC (or self-esteem) at the apex, specific domains at the middle of the hierarchy that are in turn divided into more specific sub-domains at the next level.

Moreover, individual's SC can be affected by several factors such as others' evaluation of the individual, especially, those who are important in his/her life. These evaluations appear through social interactions, which lead us to evaluate ourselves in accordance with how others evaluate us, or with the manner in which others evaluate us. However, what is most important here is our perception of the conduct of others because

it is the most important and profound impact on SC from other people's concept (Dawood and Hamdi, 1997). In this connection, SC is an important psychological component that helps in understanding several patterns of conduct in an individual in both academic and nonacademic aspects. Additionally, it is considered the core of psychological adaptation, personal happiness, and good performance. Finally, (Granvold, 1994) thinks that 'SC' is the main factor in social performance and human happiness. SC represents a general self-assessment for low achievers and can be classified into two kinds: academic and social. Academic SC reflects the individual's satisfaction with his/her own academic achievement, whereas social SC reflects the individual's familiarity with the society where he/she lives and the attitude of this society towards the individual.

SC is knowledge of one's self or even while self-esteem (one's subjective evaluation of one's value or worth). There are several different components of SC: physical, academic, social, and transpersonal. The physical aspect of SC relates to that which is concrete: what one looks like, his or her sex, height, weight, etc.; what kind of clothes one wears; what kind of car one drives; what kind of home one lives in; and so forth. One's academic SC relates to how well the individual does in school or how well one demonstrates an ability to learn academic content. There are two levels: a general academic SC of how good one is overall and a set of specific content-related SCs that describe how good one is in math, science, language arts, social science, etc. The social SC describes how we relate to other people and the transpersonal SC describes how we relate to the supernatural or unknowns (Franken, 1994).

The importance of SC in educational research is that it is related to academic achievement and motivation. It is linked to homework, school grades, coursework selection, and long-term educational aspirations. In other disciplines the importance of SC is highlighted by consistent relationships between appearance SC and eating disorders; physical SC and health-related physical activity; self-esteem and socioeconomic attainment, depression, criminality, and quality of life. According to Holtzclaw and Louis (1983) SC is an important element in the growth and developmental process for individual human beings. The authors emphasized those adult learners in institutional programs need assistance in probing their inner selves to be able to move ahead in their lives.

In spite of the low level of SC among low achievers, there is evidence that shows that low achievers realize this fact because although their academic abilities are low, they manage to prove that they are completely competent in other aspects. However, many low achievers feel that their achievements in other aspects are outstanding and that they sometimes excel, thereby they strongly feel that this situation is very useful for them. This positive self-recognition replaces the negative academic SC and allows low achievers to have intermediate average levels of SC. It also makes low achievers concentrate on selective activities like the ones they think they perform well and the ones they think that they do not face difficulties when performing them (Vaughn, 2001).

Additionally, Vaughn (2001) pointed out that although low achievers have difficulties in recognizing both the academic and social aspects of SC, they recognize the social aspect in a better way than they do in the academic aspect. This supports the

hypothesis which states that SC among low achievers is inappropriately affected by lower academic performance.

In their analysis of (61) participants, the study conducted on low achievers by Bear et al., (2002) found that low achievers' SC is less positive than that of normal achievers. They also found that low achievers are more aware of the social SC than the academic one. This finding is in line with Vaughn's (2001) in which he reported that all low achievers suffer from academic difficulties and that not all low achievers suffer from social difficulties.

### **2.5.1 Self-Concept and Low Achievers**

Teaching in schools as Granvold, (1994) says is thought to be a positive 'interactive process' between the teacher and his students. This process of interaction is carried out through specific organized activities that require appropriate circumstances and conditions prepared by the school administration to influence students. The author believes if the environment of learning process is under the control of the teacher, it will influence the personalities of students, on one hand, and their interaction with the learning situation, on the other hand. It is normal that students inside the classroom are exposed to an academic curriculum, which consists of scientific and nonscientific subjects. As a result, students will acquire specific directions such as self-discipline, responsibility, self-confidence, SC reinforcement, work- group cooperation styles and respecting opinions and feelings of others. The academic SC as Granvold,( 1994) says is influenced by social interaction in the school as well as in the classroom. The abilities of teachers to socially interact with children vary. This leads not only to differences in

the achievements of children but to differences in their behavioral and social growth as well. As a result, their self- academic concept will be influenced, too.

### **2.5.2 Studies Related to Self-Concept and Low Achievers**

A study of the academic achievement and SC of male and female hearing-impaired students in Nigeria was conducted by Akinpelu (1998). The purpose of this study was to investigate whether differences exist between the academic and SC of male and female hearing-impaired students. A purposive sampling procedure was employed to elicit responses from 566 (364 males and 204 females). The Adolescent Personal Data Inventory (APDI) was used to measure SC while the respondents' Junior Secondary Certificate Examination (JSCE) results were measures of their academic achievement. The data collected were analyzed using the t-test statistical procedure. The findings revealed that male hearing-impaired students did not achieve better than their female counterparts. The findings revealed that male hearing-impaired students did not achieve better than their female counterparts. It was also found that the SC of male hearing-impaired students was not significantly different from that of female hearing-impaired students.. It was then suggested that counselors should utilize strategies which could enhance the development of favorable SC among hearing-impaired students in general and female hearing impaired students in particular.

Chang (2002) investigated the relationship between self-esteem of high secondary and intermediate school students of low achievement, and involved them in organized academic and non-academic class activities inside and outside their schools. The study sample included all students of these schools, and Copper Smith's Self

Esteem Inventory was used. In this study, the procedure was to answer the items of questionnaire lists of Self Esteem Inventory by students and their parents. The results of the study revealed the following: (a) The gauge of the self – esteem of students with low achievement involved in non-academic activities is higher than the self-esteem of students of low achievement who did not participate in any activity (b) Students, parents and teachers appeared to think that the academic activities carried out by the school increase the self-esteem of low achieving students (c) the parents' esteem of low achievement in the social competence case was less than their normal brothers.

Dyson (2003) studied the general SC, the academic SC, the social competence and the behavioral problems of children with low achievement usually face within the limits of their families. This study sample consisted of 38 children divided into 32 males and 6 females whose age average range between 8-13 years old. The researcher divided the subjects of the study sample into children of low achievement and their normal brothers. Peariss Harris SC Invent Test, the Social Competence Invent Test, the Social Competence Invent and the children's behavior lists are used to compare general SC, academic SC and social competence. The study concluded that responses of children's parents were obtained by using different scales and the results are as follows:

1. There were no differences between children of low achievement and their normal young brothers in both general SC and academic SC.
2. The study revealed that parents' esteem for the children of low achievement in the social competence case was less than their normal brothers.

3. The study revealed that there was strong parent esteem for the children of low achievement because they participated in the behavioral problems much more than their normal brothers.

Jostad (2009) investigated whether the length of adventure education courses have an effect on changing the students' SC. The factors that were studied included: student group, geographical terrain and instructor team. Three course durations (14-day, 30-day, and semester long (68-76 days)) from The National Outdoor Leadership School were investigated. A total of 105 subjects over twelve courses were studied with four courses. There were 34 subjects from 14-day courses, 43 subjects from 30-day courses, and 28 subjects from semester courses. The Tennessee SC Scale: Second Edition was used. The results of the study show that there was a significant difference at the  $p < .05$  level between the 30-day and semester courses. No correlations were present between the change in SC and student group, geographical terrain, and instructor team variables. It is recommended to look at the change in SC from a longitudinal aspect and see if SC changes over time after a course.

The focus of a study carried by La Shawn (2011) was to find the relationship between academic SC and academic achievements in African American students who have experienced geographic mobility. Specifically, this study used quantitative methods to assess African American students from counties in Iowa to obtain information about the students' relocation from urban to rural school environments and to understand how such moves influenced their academic performance and academic SC. The sample consisted of 101 African American middle school/junior high students who had been



enrolled in Iowa schools for less than 24 months or more than 24 months. Results indicated a significant relationship between academic SC and academic achievement measures of ITBS composite scores and cumulative GPA. Gender and the length of time since transition were not shown to be linked to students' academic ability or performance in school. Data gathered from this study aimed to assist administrators, parents, educators, and school counselors with understanding geographic mobility, academic SC, and academic achievement. The findings obtained from this study tried to provide insight about other factors that relate to the academic setting and students' assessment. Factors such as student motivation, perceptions of peers, the academic self-perceptions students possess, students' attitude towards teachers and classes, and students' attitude towards school

A study carried by Shahuria , etal, ( 2011 ) aimed to get formation of SC of early adolescent boys. The study as an empirical investigation on SC as related to gender, parental profession and academic achievement among early-adolescent boys and girls in various institutions of Rajshahi city. The subjects of this study were 160 respondents. They consisted of a  $2 \times 2 \times 2$  factorial design involving two levels of gender (boy/girl), two levels of parental profession(service/business) and two levels of academic achievement (high achiever/low achiever). The results showed significantly higher SC of girls than boys. In case of academic achievement high achievers expressed significantly more positive SC than low achievers. In case of parental service, high achiever boys and high achiever girls expressed significantly more positive SC followed by their counterpart low achievers. In case of parental business, it was found that high achiever girls expressed significantly more positive SC than low achiever girls. However no

significant mean difference was obtained between high achiever boys and low achiever boys in case of parental business. Thus, SC of young children was found to be determined by gender, parental profession and academic achievement during early adolescent stage.

Jacob's (2011) study focuses on the role service-learning plays on student SC to help and address the high school dropout epidemic. A mixed-method, qualitative and quantitative was used to discover in what ways service-learning impacts student SC. The data was collected through a thirty-minute questionnaire consisting of three parts. The first two parts collected qualitative data by using six open-ended questions asking the subjects to describe themselves and the social groups of which they are members. The third section used Harter's Self-Perception Profiles for Adolescents (SPPA) to measure adolescents' SC across forty-five statements representing the following eight domains: Physical Appearance, Social Acceptance, Close Friendship, Romantic Appeal, Behavioral Conduct, Athletic Competence, Job Competence, and Global Self-Worth. Findings of the study suggest a positive correlation between service-learning and student SC.

### **2.5.3 The Relationship between Self-Concept and Creative Thinking**

Self-Concept (SC) has been posited as a mediating variable facilitates the attainment of other desired outcomes (Byrne, 1996; Marsh & Hattie, 1996), and improvements in SC lead to improved desirable academic outcomes (Marsh & Craven, 1997). The relationship between SC and CT has been the focus of many studies. In the 1950s, investigations about the characteristics of creative individuals indicated that

highly creative individuals had stronger SC than their less creative peers (Barron, 1969; Getzels & Jackson, 1962; MacKinnon, 1962). However, although some studies have pointed out that there is a strong, positive relationship between SC and CT behavior; different findings have also been reported. Divergent results about the relationship between SC and CT are discussed below.

In a study intended to know the relation between the school-family environment and each of CT and moral orientation and the SC of low-achievers is conducted by Raw and Marjoribanks (1991). The researcher applied the first and second parts of Getzel & Jackson Test of creativity-measurement and March's Test of SC on a sample of 312 Australian low-achiever students. They used the analysis of descending class-work to test the relation between all the study-variables. The study revealed the following results: (a) The low-achievers' cognition of the effect of school-family environment was moderate in relation to the general variables (b) There was a strong relation between the low-achievers cognition of the school-family environment and CT and SC (c) There was a strong relation between the low-achievers cognition of the school-family environment and orientation (d) there was a moderate relation between the low-achievers' cognition of the school-family environment and each of the SC and the moral-concept.

In one other long study which lasted for three years, (Icaby, 1993) chose a sample of 900 low-achieving students to compare between the effects of two epistemic/cognitive programs applied in teaching thinking and SC for low-achievers students, and other talented low-achieving students. The first program was applied

within their basic curriculum; whereas the other was applied independently. The evaluation was performed within two stages: the first was the stage of students when they were at the fourth grade; and the second when they became seventh-grade students. After analyzing the data, the following were the main results:

- (a) Both programs helped in teaching thinking to low-achieving students.
- (b) The improvement of comprehension in talented low-achieving students.
- (c) The improvement of SC in low-achieving students.
- (d) There was no difference between the two programs in regards of teaching thinking or self-improvement.

Harter (1986) stated that SC is more unitary before the child reaches adolescence. In addition, he pointed out that it is necessary to develop a theory specifying the way in which the various components of SC organize themselves into a hierarchy. In fact, Marsh and Shavelson (1985) recognized that although there was strong support for the hierarchical model based on responses by younger children, "As the self-facets become more distinct as in the late-adolescent data, the utility of the hierarchical ordering becomes questionable" (p.122). Finally, for Hoge and Renzulli (1991), there is an absence of meaning in the concept of global self-worth in the hierarchical model.

According to Marsh and Craven (1997), "SC cannot be adequately understood if its multidimensional, domain-specific nature is ignored" (p. 191). To realize students' full potential, SC enhancement should target specific facets of SC rather than general SC. The design and implementation of high-quality SC enhancement studies will provide promising directions for future research and classroom practice.

Felker and Treffinger (1971) have found that fourth grade students with high SC scored significantly higher than those with low SC on self-evaluation of CT and on creativity measures such as verbal fluency, flexibility, and originality. Similar results were obtained by Smith and Tegano (1992), using college students as a sample. Students who displayed better performance on a CT inventory also scored higher in six of the eleven dimensions of a self-image questionnaire (emotional tone, social relationships, sexual attitudes, mastery of the external world, vocational and educational goals, and superior adjustment) than students who scored lower in creativity. Sears (1963) also found that children of superior intellectual ability had higher SCs, as well as higher ability to think in original, CT ways, than children of lesser intellectual ability.

Conversely, some studies have failed to support the relationship between SC and CT. Sexton (1984), for example, found no significant relationship between SC and CT (e.g., fluency, flexibility, originality, and elaboration) in Black and Hispanics fourth graders. Likewise, Williams, Poole, and Lett (1977) indicated that there was no significant difference between SC scores of high CT children and low creative Australian children. Fabrizi and Pollio (1987) assessed the relationships in humor, CT, and SC in seventh and eleventh grade students, Regression analyses indicated that

negative SC was a significant predictor of originality scores on the Torrance Tests of CT for seventh graders. Deo and Mohan (1972) also found no differences between CT and SC of tenth and eleventh grade Indian students. In addition, the results obtained by Wright, Fox, and Noppe (1975) did not support the existence of a relationship between CT and SC in college students. Studies involving the relationship between SC and CT of gifted and non-gifted students suggested that there were no differences with respect to CT between gifted students with higher SC and students with lower SC (Gilbert, 1991; Quaglino, 1979). However, Quaglino (1979) found that non-gifted students with high SC scored significantly higher on the CT measure than those with lower SC.

Many studies have evaluated the impact of CT enrichment programs on SC and CT of students. The results have shown an improvement of CT but no significant changes related to SC. Blankenship (1975) investigated the effects of 10 hours of creativity training on the CT performance and SC of first grade students. He found that the treatment group displayed significant improvement in CT such as fluency, flexibility, originality, and elaboration, but no effect was observed in respect to students' SC'. Similar results were obtained by Meador (1994) who implemented a program using synectics with kindergarten children. Camp (1994) conducted a 12- year -longitudinal study involving the Williams Cognitive Affective Interaction model-based enrichment program with creative children. The effect of the program on students' CT varied over the years. Figural measures of fluency, flexibility, and originality indicated maintenance of high scores or an increase in scores through grade 6 and then a decline through grade 12. The verbal measures also indicated a decline in the scores of sixth to twelfth grade period. As reported in previous studies, no significant treatment effect was observed on

SC. Interesting results were obtained by Bennett (1982) in respect of the influence of CT experience in drama upon the CT and SC of fifth and sixth grade students. In this study, the treatment group had a significant gain in creativity, while the control group experienced a decline. However, both treatment and control groups experienced significant gains in SC.

Fults (1980) investigated the effectiveness of an instructional program for developing CT, positive SC, and leadership among intellectually and academically gifted students in grades 4, 5 and 6. The intervention process included stimulation of individual interest, provision of enriched experiences, and emphasis on the development of cognitive and affective skills. The treatment group improved in the aspect of CT, while the control group had gains in SC. Kolloff and Feldhusen (1984) also assessed the effects of an enrichment program, called the Program for Academic and Creative Enrichment, on SC and CT of third, fourth, fifth, and sixth grade gifted students. They found that the treatment group had gains in verbal and figural originality, but no significant main effect was observed in respect of SC. Finally, Olenchak (1995) investigated the effects of a highly structured, personally tailored enrichment program on SC and CT of fourth, fifth, and sixth grade gifted/learning disabled students. Results suggested that year-long participation in the program had a significant positive impact on SC and creativity production of the students sampled in this study.

Based on the findings of the studies reported above the evidence about the relationship between SC and CT is far from clarity. The discrepancies may be due to many factors including: (a) the use of different measures of SC and CT, which makes

the comparison of results difficult (b) the use of SC instruments based on the uni-dimensional model, which might mask the relationship between creativity and specific dimensions of SC (c) sampling using subjects of different ages as subjects, which makes it difficult to generalize the results; (d) the varied characteristics of individuals used as subjects (e.g., 'gifted, non-gifted' learning disabled)' which make difficult to contrast the findings (e) the influence of social and cultural variables (individualization vs. group membership, nationality' religion' as examples) in the development of SC and CT (f) the use of different research designs (e.g., experimental, quasi-experimental 'co relational studies) in investigating different research questions can be useful, therefore analyzing the relationship between SC and CT from distinct perspectives and (g) the use of basic statistical analyses (e.g., t-test, Pearson product-moment correlation) to assess the complex relationship between SC and CT ' which might lead to partial and or inaccurate results. It seems clear that further research is necessary to investigate the extent to which SC and CT are related to better advise teachers about educational strategies that can enhance both students' creativity and SC.

To sum up, this study aims to investigate the CT and SCs of Jordanian low achievers in resource rooms in grade six. These students are learning in the resource rooms for six years. Many researchers ( Deo and Mohan, 1972; Sawason, et.al 1998) have supported the use of CoRT and Scamper Programs in developing CT and SCs. In this sense the researcher believes that using effective teaching programs in teaching low achievers are useful. Therefore, a modified strategy-based module that combines two programs which includes different activities seems to be more effective in catering for the needs of Jordanian low achievers.



## **2.6 CoRT Program**

Edward De Bono is one of the most outstanding scientists of 'thinking' who strongly protects the systematic strategies of Teaching Thinking Skills (Sometimes referred to as Teaching Means of Thinking Skills). His program, one of the greatest universal works on teaching thinking, has been applied in different educational, administrative and industrial fields in various countries all over the world. Currently, it is used by more than seven million students at primary and college learning levels in more than 80 countries. CoRT, the name of the program, is derived as the acronym of Cognitive Research Trust when it was first established in Cambridge, England. The letter O is added in order to make it a word that is easily pronounced. The program is based on the belief that thinking is a skill which can be acquired in a direct way. The program depends on using the means as a thinking teaching strategy, and it is designed to present thinking skills by using a group of practical instruments. Students are trained to use these practical instruments in various situations. There should be various training opportunities for students to apply these instruments in order to develop their thinking skills. (De Bono, 1988) utilized this fact to design an approach of thinking teaching depending on viable stable instruments to be employed in different situations of teaching syllabus whether inside or outside schools/universities, i.e., real life situations. The objectives of the CoRT Program can be summarized into four issues given below: (De Bono, 1998).

- (a) There is an area in the curricula where thinking can be treated in a direct way and in an appropriate freedom.
- (b) The students recognize that thinking is a skill that can be developed by paying attention to learning and training.
- (c) The students will consider themselves as thinkers.
- (d) The students will acquire movable thinking means that work in a good and appropriate way in all the situations and in all the aspects of the curriculum.

#### **2.6.1 Characteristics of CoRT Program**

According to De Bono (1998) the following items can be considered as the main distinctive features of CoRT program:

- (a) The program is applicable and independent since it can be separated from the contents of a teaching syllabus; and, indeed, this is the direction of De Bono. It also obtains some benefits that can support the studying of teaching syllabuses through testing the situations and the problems of the contents of such syllabuses.
- (b) The program is valid to be used in different levels of study regardless of the students' standards and cognitive abilities. In other words, it covers all stages of studying starting from the primary stage passing through the secondary stage and ending at the university-college stage.
- (c) The program consists of separate lessons that are not arranged in an organized sequential way except in the first part. Cognitive Field Extension. These lessons

aim at achieving specific objectives. This helps the teacher to understand and present the lessons of the program to his/her students in different stages.

- (d) The program is a coherent unit; i.e., its objectives, teaching methods, learning materials, means of evaluating testing changes and levels of students' thinking and interests are coherently integrated.
- (e) The program contains many proverbs which are taken from the students' real life situations as a means to motivate excitement and interests.
- (f) The program is available in book-shops; therefore, it is very easy to obtain the it by those who are willing to use it.
- (g) The simplicity of design and application is one more merit of this program. Besides, original materials are readily available and can be translated into Arabic.
- (h) The program is appropriate for studying/teaching/learning lessons relating to time and application.
- (i) The program consists of many evaluation means necessary for testing the changes in levels of students' thinking after the application of the program.
- (j) The program is used for different levels of students' cognition and ages.

### **2.6.2. CoRT Program Description and Components**

CoRT thinking program consists of six teaching components that cover many thinking aspects. In turn, each component includes ten lessons designed to be covered in approximately 45 minutes each. The program can be applied to ages, 8-22 years students. Below is the description of the six components that (Jarawan, 2005) listed.

- (a) “Breadth”. It refers to students - thinking -training of all aspects of a situation in whatever available method(s). This unit is concerned with the results of each test in comparison with the achieved objectives. In this regard, De Bono suggests that this unit should be taught at the beginning of the program while the other units can be taught later.
- (b) “Organization”. This unit focuses effectively on a situation and directs the students' attention towards this situation in an organized way.
- (c) “Interaction” which is concerned with the issues that relate to some necessary logical evidence.
- (d) “Creativity”, where a number of strategies are presented. Such strategies are used to create, evaluate and/or review thoughts.
- (e) “Feelings and Information”. It is concerned with the factors of excitement that influence the process of thinking.
- (f) “Action” which presents a general frame for getting problem solutions through connecting the strategies presented in previous lessons to each other or in a separate way.

The following few lines presents the lessons included in the first component (De Bono, 1998).

**(a) Lesson One**

It deals with '*Plus*', '*Minus*', and '*Interest*' (PMI). Students learn inspection of a certain idea through some positive, negative and exciting points they feel interested in.

**(b) Lesson Two**

It says consider All Factors' (CAF). Students learn how to analyze each situation during the classroom lesson considering not only the apparent factors of the situation but its hidden factors as well.

**(c) Lesson Three**

It regards *Rules*. In this lesson, students use the first two means used for checking rules and factors necessary to be taken into consideration to create new ones.

**(d) Lesson Four**

It concerns *Consequence and Sequel* (C and S). The Logical Results: Future Reference Attention should be taken into consideration towards immediate results, short timing results and long timing results; and any event, plan decision or explanation.

**(e) Lesson Five**

It is concerned with *Aims*', '*Goals*' and '*Objectives*' (AGO). This classroom lesson helps students classify their own objectives and other people's objectives. It draws the students' attention to the idea of the objective and their reaction towards this idea.

**(f) Lesson Six**

It is '*Planning*'. The lesson teaches students how to plan utilizing the instruments previously presented, especially the objectives and the logical results.

**(g) Lesson Seven**

It talks about the 'First Important Priorities' (FIP). It helps students to give priority to the selection of probabilities/possibilities and their alternatives.

**(h) Lesson Eight**

It deals with *Alternatives, Possibilities, Choices* (APC). In APC students learn the derivation of other alternatives and interpretations instead of using reactions connected with obvious interpretations in order to get rid of the inflexibility and affected feeling reactions of thinking.

**(i) Lesson Nine**

It is devoted to 'Decisions'. In this lesson, students learn how to make decision with the help of the instruments previously mentioned, APC and FIP in particular.

**(j) Lesson Ten**

It is concerned with *Other People's Views* (OPV). This lesson reduces the ambiguity of students' feelings towards other people's points of view by directing them to intended inspection of other people points of view.

**2.6.2.1 Steps of Lesson Applications (CoRT)**

De Bono (1998) used one complete method for the application of all the lessons contained in his program of Thinking Teaching. He suggested seven dependent steps. Time devoted for teaching each lesson is approximately 45 minutes. The steps are arranged as follows:

- (a) Presentation of the means, skill or lesson subject by using work cards prepared in advance by the teacher according to the demands of the lesson or the skill.

- (b) Presenting the examples of students in order to clarify the nature of the skill and discussing the meanings and usages of the skill with students themselves.
- (c) Dividing students into 4 to 6 groups and training them at a specific mission using work cards for three minutes.
- (d) Listening to the reaction of the student groups to the mission and asking each group to present their suggestions and/or ideas.
- (e) Repeating the same processes through training another mission or a second item of the work card.
- (f) Supporting the process of mission application by the use of the practical points mentioned in the work card.
- (g) Assigning homework to the students using one of the project –items mentioned in the work-card for this purpose.

### **2.6.3 Studies Related to CoRT Program**

Bell and Hinnant, (1993), carried out a study aiming at finding out the effect of the meaning of thinking, ideas treatment, *Plus, Minus, and Interest* (PMI) from the first CoRT programmed unit on the effective composition writing. The study-sample consisted of students of the English Language Department at ALABAMA University. The study consisted of 111 students distributed in two groups: a 55 student experimental group, and a controlling group which included 56 students. The results of this study proved that there are statistical differences on the side of the experimental group that showed a real development in the students' composition writing.

Another study was done by Al-Khateeb (1995) which aimed at finding out the effect of a training program that depended on the three units of CoRT program: Cognition, Extension, and Interaction in developing the Cognition Thinking of ninth grade students in Jordan. The study-sample consisted of 65 students randomly distributed in two groups: the experimental group of 33 students and a controlling group of 32 students. The results revealed differences in the final degree of Torrance's oral Inventory and in its sub-directions represented in flexibility and originality.

Al-Srou and Hussein, (1997), devoted their study to investigate the effect of the three parts of CoRT program in thinking teaching: Cognition Extension, Organization, and Creativity on creativity thinking development of eighth grade students in Jordan. The sample of the study consisted of 80 students, randomly distributed into two groups, an experimental group and a controlling group. The experimental group consisted of 40 students and the control group consisted of 40 students. The two researchers applied Torrance's Oral Inventory as a pre-test and a post-test on both groups. After exposing the members of the experimental group to the mentioned parts of the program, the results came to prove that there was a mathematical reference influence of the training of the aspects of oral-fluency, oral flexibility on the members of the experimental group. However, other results show that there is no statistical reference influence training of oral-originality.



Shibeeb's study (2000) was made to find out the effect of cognition, organization and creativity in the CT of students at the intermediate stage in Syria. The study-sample consisted of 84 subjects, male and female students distributed into an experimental group of 42 male and female students, and a controlling group of 42 students. The researcher used an Oral-Torrance Inventory as a pre-test in order to measure the effect of the program applied in this study. The study concluded that there were measurement differences between the performance of the members of the experimental and controlling groups in the side of the experimental group for all the points of Torrance Inventory. The performance of the members of the experimental group was not influenced by the factor of gender. It also proved many other differences between the performance of the members of the experimental group according to their achievement levels in Torrance Inventory by the side of the intermediate level in comparison to the whole degree and points of fluency, flexibility and originality.

Shirley (2001) aimed to evaluate the application of the first part of CoRT program for Thinking Teaching (Cognition Extension). Their study-sample consisted of 56 first-sixth grade students in one governmental primary school in Malta .The study presented many recommendations about the National Curriculum in which the first CoRT programmed unit was introduced to the students from grade one to grade six using personal and social learning. It was applied by three training teachers .The report of the research implied an analytic and evaluative description of the project which, in addition, provided some more recommendations .The results indicated that thinking can be learned in a direct way and the effect of thinking training for young children of 5-7 years old was more obvious than the effect of training of thinking on the children of 8-

11 years old. The study called for strengthening the choral-work skills through teaching thinking, and emphasized the importance of transferring the effects of training of thinking to other learning situations.

Al-Soweiti (2001) concluded the effect of using the two units: Cognition Extension and Information and Affection of CoRT program in criticizing thinking development among tenth-grade female students. The study-sample consists of 80 subjects. It concluded that there are mathematical differences between the experimental group and the controlling group in using the test of pre-criticizing and post-criticizing of thinking tests.

In summary, the studies that related to CoRT Program show the effect of the CoRT program in improving low achievers' academic performance. The effect of skills such as thinking development, cognition, organization and creativity on the CT of low achievers have been found in the results. Since the current study focused on the use of a Modified Strategy-Based Module which includes practices and activities of CoRT and SCAMPER Programs and its effect on Jordanian low achievers' the creative thinking and self-concept. The researcher, therefore, tried to see how this module can develop Jordanian low achievers' academic performance.

## **2.7 SCAMPER Program**

SCAMPER, as a strategy, includes 52 training units with 52 class lessons. The duration time of each lesson is 45 minutes for the experimental student-group. It involves an average of 5 weeks of daily training. The first accompanist briefs the

strategy of scampers thoughts of creativity as a method of enhancing thoughts/ideas. Al-Srour( 2002) explains that famous creativity approaches includes the following:

- S Substitute: Substituting something for something else
- C Combine: Combining ideas, performances or certain things with each other
- A Adjust: dusting something in order to be adjusted with a certain objective
- M Modify: Modifying, enlarging and making things smaller
- P Put to other uses: What are the other usages of something?
- E Eliminate: Getting rid of, eliminating and deleting a portion, a group or a feature
- R Reverse: Reversing things.

Al-Srour, (2002) recommended to apply this encouragement to three-year old children up to the university stage. It depends on a group of training units. This can be carried out in games that encourage the intended cognitive activity in the individuals to whom this strategy is applied.

### **2.7.1 Strategies of SCAMPER Program**

This strategy aims at achieving the following:

- (1) Developing students' CT Skills of “Fluency”, “Flexibility”, and “Originality” through developing the aspect of their knowledge and learning various strategies in thinking.
- (2) Developing the students' SC through what the program includes,; i.e., training on group working, increasing the students' self-confidence, giving them an opportunity to feel that they are able to present ideas and increasing their ability to confront problems and difficulties.
- (3) Training students in using the means of thinking strategies of SCAMPERS.

### **2.7.1.1 Steps of Lesson Applications (SCAMPER)**

The program of SCAMPER is a method used to motivate thinking. It is regarded as one of the creative styles which help individuals to develop their CT. This program which is designed by Bob Eberle (1987) consists of ten games. Each game should be done in 45 minutes. So the 10 games should cover approximately 450 minutes (7 and half hours). The games are:

- (a) The eighth Day of the Week
- (b) Sights and Sounds, Upside Down, and Around
- (c) Brown Paper Bags
- (d) Dogs and Cats and Sheep's and Bats
- (e) Mind shower
- (f) Leap before You Look
- (g) Oops
- (h) Room for the Future
- (i) 2070 Script Writers.

### **2.7.2 Studies Related to a Strategy Based Program for Idea-Generating (SCAMPER)**

The study of Hayes (1998) entitled with “*Generating Ideas with Divergent Thinking Tools in the Development of Instructional Strategies*”, aimed at knowing problem solving in an instructional design that require both divergent and convergent thinking. ISD training, models, and various ISD-related tools facilitate convergent thinking, but rarely provide direct support for divergent thinking. The purpose of the study was to investigate the process that instructional designers use to generate ideas in the development of instructional strategies and how they are applied to various thinking

tools to support this process. Initially, nine full-time instructional design students who represented diversity in divergent thinking ability, ISD educational background and work experience, age, gender and race, took part in the study. Based on these variables, five participants were then selected to be investigated in greater depth. All the participants were instructed on how to use divergent thinking tools such as Morphological Matrix, Scamper, and Visually Identifying Relationships in the context of instructional strategy development. Participants had no prior experience using divergent thinking tools. Within the framework of a case study method, protocol analysis, interviews, and questionnaires were used to collect data on how the five participants generate ideas with the given tools a detailed, yet hypothetical instructional strategy- development problem. Results of the study provided a richer understanding of the major events, stages, and cognitive processes involved in the process of generating ideas for the components of instructional strategies with divergent thinking tools. The results of both tactical and functional use of the given divergent thinking tools were illustrated and discussed. Divergent thinking training outcomes and design session idea generation outcomes were also illustrated and discussed. Additionally, participants' perceptions of how training and tool-use influenced the idea generation processes and outcomes were analyzed and described.

Another study of Mijare (1985) was designed to determine the effects of the Scamper technique and anxiety on creativity enhancement. The independent variables were measured by Spiel Berger's State-Trait Anxiety Inventory, Form Y and by the Torrance Tests of CT, Figural, Form A. The dependent variable of creative enhancement was measured by the Torrance Test of CT, Figural, Form B. Using stratified random

sampling, 52 subjects, 17 females and 35 males, ages 12-18, inclusive, with a minimum IQ score of 120, from the two sessions of the 1985 Mississippi State University Summer Scholars camp were assigned to one of two groups. The treatment group received scamper problem-solving training as a creativity enhancement technique when trait-anxiety was considered as an intervening variable. Training consisted of seven games with follow-up activities such as creative writing or drawing, and creative body language. These exercises were devised to permit subjects to break away from rigid thinking patterns. The experimental and control groups were administered the dependent measure. The control group did not have the benefit of the Scamper training. Significant differences in pre-test and post-test scores were found regarding originality and elaboration for both groups. Females outperformed males on fluency, flexibility and originality. Older subjects did better than younger subjects on flexibility. Pre-test scores on fluency, flexibility, originality, and elaboration respectively accounted for 31%, 15%, 7%, and 26% of the variance in residual scores on each of the posttest measures of creativity. Gender accounted for 7 to 9.9% of the variance in fluency, flexibility and originality. Finally, trait-anxiety explicated 2% of the variance in fluency and 7% of variance in flexibility. Results indicated that the SCAMPR technique was not feasible as a variable in this experimental situation.

In conclusion, results of the studies related to SCAMPER Program provided a richer understanding of the cognitive processes that involved in the process of generating ideas for the components of instructional strategies with divergent thinking tools. The results show the effects of the SCAMPER technique and anxiety on creativity enhancement. As this study used a module that intergrates CoRT and SCAMPER

programs in one module that is the (MSBM) to develop Jordanian low achievers' creative thinking and self-concept, the researchers views that the integration of different activities in such programs might support the development of the Jordanian low achievers academic performance.

## **2.8 Conclusion**

This chapter reviews the literature that relates to the scope of the purpose of the study which includes definitions of Low Achievers, CT, SC and definitions of CoRT Program and SCAMPER Programs and also provides a review of some studies related to the scope of this study.

The literature reviewed evaluated the application of CoRT and SCAMPER programs for developing creative thinking and self-concept of low achievers. The studies suggested a wide range of activities and procedures for assessing creative thinking and self-concept of low achievers. Each study has focused on teaching a number of activities by a number of procedures. Research shows that the choral-work skills through teaching thinking, are emphasizing the importance of transferring the effects of training of thinking to other learning situations that depend on a group of training units. This can be carried out through games that encourage the intended cognitive thinking in the individuals to whom this strategy is applied. Many studies have supported the impact of CT enrichment programs on SC and CT of students.

The results have shown an improvement of CT but no significant changes related to SC. It is the teachers who should seriously consider the implications of the techniques and procedures that facilitate the interaction of their students with the different activities to create the low achievers' creative thinking and self-concept. Their tasks include activating their students' creative thinking and self-concept. It is clear that teachers play an important role of planning and implementing activities that spark the achievers' interest and enthusiasm for the topic.



## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter discusses the research methodology and techniques that was used in this study. It sets out the rational for the methodology. It also describes the considerations that influence the development of research techniques and procedures. It includes the population, sample selection, validity and reliability of data collection, pilot study and statistical methods that was used for analyzing the data.

#### **3.2 Population and Context**

This study was conducted at Al-Mafraq governorate in Jordan. The population of this study involves all the low achieving students who are learning in the resource classrooms in governmental schools at Al-Mafraq governorate in Jordan during their scholastic year (2010-2011). The total number of low achieving students in the population is 420 distributed in 21 resource rooms at Al-Mafraq governorate in Jordan. The participants are a group of low achievers in the sixth class of a mixed gender. Their age is around 12 years. The sample was selected from the whole population. For the purpose of this study four teachers were selected to teach the groups.

### 3.2.1 Selection of Student Sample

In the study (N=160) of low achievers were selected as a sample for this study from a population study of 420 low achievers at Al-Mafraq governorate in Jordan (Ministry Of Education, 2010-2911) from 21 resource rooms as mentioned earlier. The samples were divided into four groups: Two control groups and two experimental groups. The two control groups include 80 low achievers (40 females and 40 males) and the two experimental groups include 80 low achievers (40 females and 40 males). The researcher took the lists of the names of the whole population. The names were written individually in small papers. The researcher put the names in a bowl and then selected them randomly to make the sample of the study. The 160 low achievers were randomly selected from the whole population (420). Table 3.1 shows the distribution of student participants in resource rooms.

**Table3.1:** Distribution of Participants in Resource Rooms" Sample

Number Gender	No of Groups	Sample Students	Number of low achievers from 21 resource rooms at - Al-Mafraq governorate
Male & Female	4	160	420

### 3.2.2 Selection of Teacher Sample

As mentioned earlier, four teachers were selected from the resource rooms to teach the groups. Teacher selection criteria included teachers who have similar teaching experiences and training. The researcher has worked in coordination with Al-Mafareq Provincial Directorate of Education to expose the sample teachers in treatment

depending on the resource rooms. The researcher sat with the four teachers and then explained the aim of this study and give instructions regarding their roles in teaching the groups. The two teachers who taught the two experimental groups were trained on how to teach the Modified Strategy-Based Module (MSBM), while the two teachers of the control groups used the Currently Used Strategy-Based Module (CUSBM). Table 3.2 shows the distribution of teacher participants.

**Table3.2:** Distribution of Teacher Participants in Resource Rooms” Sample

Number Gender	No of Groups	Sample Teachers	Number of Teachers in 21 Resource Rooms at - Al- Mafraq Governorate
Male & Female	4	4	21

### 3.3 Research Design

This study is a *quasi- experimental design* that aims developing the level of creative thinking (CT) and self-concept (SC) of low achievers at Al-Mafraq governorate in Jordan. This kind of design includes an experimental (treatment) group and a control group where two groups are pre-tested and post-tested. The sample of this study was selected randomly from the whole population. Hundred and sixty low achievers in the sixth grade were selected from the resource rooms. The process of choosing the sample is mentioned in section 3.2.1. The sample was divided into four groups: two controls and two experimental. The four groups were pre-tested before the carrying the experiment. After completing the implementation of the two measurement tools (the current used module (CUSBM) for the control group and the modified- strategy-based module MBSM) on the four groups, a post- test was conducted to evaluate the SC and

CT of the low achievers. The post-tests were compared to see the effectiveness of the treatment. Piers-Harris 2 Scales & Torrance Test CT was used as pre-test and post- test to carry out the study. Consequently, this study used a MSBM, which has been adapted from CoRT1, CoRT4 and SCAMPER programs with the treatment groups.

The data was collected using both qualitative and quantitative data collection methods. The qualitative method now is used in social science and education research. Such method allows the researcher to study and observe the problem in the natural phenomena (Berry 2006). For the purpose of this study as mentioned earlier, Torrance Test of CT and Piers& Harris2 scale were used as pre-tests and post-tests. In addition an observation checklist was also used in order to determine the effectiveness of the modified based-strategy module. The data that was collected from each group was then compared and contrasted so as to elicit the effectiveness of the learning tools. The study's design is presented in Table 3.2.

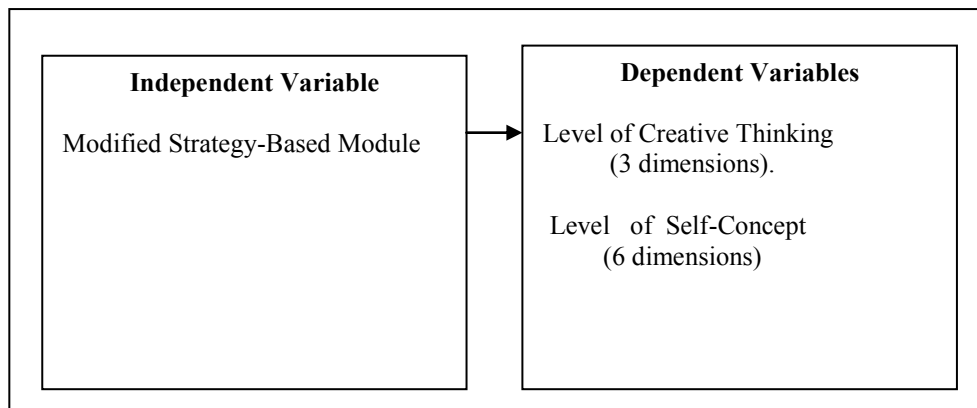
**Table 3. 3:** Study Design

Groups	Number	Pre-test	Treatment	Post-test
Control	80 (male & female)	O <sub>1</sub>	-	O <sub>2</sub>
Experimental	80 (male & female)	O <sub>1</sub>	X	O <sub>2</sub>

Note: O<sub>1</sub>=pre-test X=treatment O<sub>2</sub> = post-test

### 3.4 Variables

The measurement was on MSBM. The study aimed to measure two variables. The first dependent variable was the level of CT, specifically 3 dimensions which was measured by Torrance Test CT. The second dependent variable was the level of SC which includes 6 dimensions which was measured by Piers- Harris 2 SC Scale of the low achieving performance in the post tests within the experimental and control groups. Figure 3.1 shows the relationship between the independent and dependent variables.



**Figure 3.1:** Research Variables

### 3.5 Instruments

In this study the researcher adapted two instruments to measure the students' level of SC and level of CT. They are: (1) the original Torrance Test CT (1987) for the Arabic culture and the (2) Piers-Harris 2 SC Sub-Scales. These two instruments were used in this study as well as an observation checklist to observe the steps to use the module among the two experimental groups.. The qualitative instruments seek to get descriptive data. The first draft of each instrument was submitted to 4 professors in the university, 3 educational experts and 5 resource room teachers. These judges are asked

to assess face, content and construct validity of the clarity and specification of the tools. To get an accurate result the standard scoring of piers- Harris 2 scale and Torrance were used. CoRT/SCAMPER testing CT & SC have their specific standardized manual scoring modification, therefore, using these measurement can give an accurate statistically results for measuring CT & SC. Standardized tests are perceived as being fairer than non-standardized tests. The consistency also permits more reliable comparison of outcomes across all test takers.

### **3.5.1 Torrance of Creative Thinking Test**

The Torrance Tests of CT (1987) was applied to study the effect of the MSBM in developing CT skills among low achievers. The original Torrance CT Test (1987) according to Rania, (2000) has been working on creative behavior and its measurement methods for many years of research. This test is considered to be the most dependent test over world in creative measurement and has been useful in creative testing for more than 200,000 children annually. This test has been used in thousands of studies and it has been translated into many languages. It is published and printed in 34 languages in more than 50 countries (ibid).

Rania, (2000) presented the basic conditions that are necessary for creative tests. Rania explained the conditions as follows: (a) the test corresponds for the theory of creativity (b) the test corresponds with the creative behavior of persons in the real life (c) the test covers the members of the study regarding creative behavior (d) the test answers are non-ended answers. that means that there are no specific answers for the questions so, the individual can answer based on whatever experience he has (e) the test is highly

exciting for both young and mature (old) individuals (f) the required instructions and the responses can be applied (applicable) in different learning levels (g) the tests' instructions are objectively scored and they have creative perspective meaning (h) the clarity of the test elements such as the instructions of the application, the specific time and the procedures of the scoring are prevalent.

### **3.5.1.1 Content of Torrance Creative Thinking Test**

This test measures three creative components: fluency, flexibility and originality. The letters (F), (T), (O) are used to stand for fluency, „flexibility „and „originality“ respectively. These abbreviations are placed on the specified position for every subtest and on the specified place in the list/ or students“ answers form.

Torrance Tests for CT contains (in its final design and after the final change to suit the Jordanian environment) six activities. After deleting the sixth test i.e Asking Questions because of its weak performance application and the performance application of other supplementary tests. Hence, the test contains the following activities:

- (a) Activity One (Asking Questions): The student is asked questions in order to know if it is happening in the picture that is presented to him.
- (b) Activity Two (Guessing Causes): The student is asked to guess the possible reasons that lead to the accident in the picture.
- (c) Activity Three (Guessing Consequences): The student is asked to suggest the consequence results that may happen as a result of the accident seen in the picture.

- (d) Activity Four (Product Improving): The student is asked to present opinions and suggestions for developing a children toy in order to make this toy more interesting and exciting for the children.
- (e) Activity Five (Unusual Uses): the student is asked to mention the uncommon usages of metal cans.
- (f) Activity six Just Suppose :
  - (a) The student is shown a picture of an accident that cannot happen (threads falling from the sky to earth).
  - (b) The student is asked to imagine that this situation may actually happen. Then the examinee writes down what will happen if this accident actually happens.
  - (c) Each student is given a total of 42 minutes as a reply time distributed on the six tests as 7 minutes for each supplementary test.

### **3.5.1.2 The Translated Torrance's Creative Thinking Test**

The English version Torrance Tests of CT (1987) is translated and adapted by two educational Arabic language experts in order to fit the Jordanian environment. The researcher, then, compared and contrasted these translations, formulated initial items that serve the aims of this study.

### **3.5.1.3 Validity of Translated Torrance's Creative Thinking Test**

To assure validity of Torrance test, the researcher has submitted the final translated version to a panel of judges, including 4 professors, 3 specialists in the University of Jordan and to 5 school resource rooms' teachers in order to ascertain the



validity of the content to fit with low achievement in the environment of Jordan. Some of the items were changed based on the rater's opinions. The modifications suggested by experts and specialists have proposed the following:

- (a) Changing the first question to make it clearly and easy.
- (b) Changing the structure of the last question by decreasing the number of words to be more comprehensive and direct.
- (c) Some activities are recommended to do before some others.

After the experts' recommendations and modifications the structure of some of the questions were changed and number of words were decreased. The final or modified version was applied to know the effect of the MSBM in developing CT skills in low achievers throughout measuring the degrees of the subtests regards to (originality, flexibility and fluency).

Paul Torrance (1987) indicated that the tests of CT assessment need previous preparation in regards of:

- (a) Training some people on the assessment process.
- (b) Preparing samples of assessment forms that help the corrector exclude any wrong answer before grading.
- (c) Previous preparation of forms of grades' registration.

#### 3.5.1.4 Scoring of Torrance's of Creative Thinking Test

Since one of the aims of this study is to examine the level of CT that includes the three components (fluency, flexibility and originality), Torrance CT Test (1987) that measures 3 components: the performance of flexibility, originality and the total degree that represents the performance of these three components were used.

This study adopts the standardized manual scoring modifications of Torrance (1987) because these modifications are the most suitable statistically. The answer which is repeated once is given ( 2 marks), and the answer repeated twice is given (one mark); and a (zero) mark is given to any answer which is repeated for more than two times.

In addition, the study measured the scores of the tests (originality, flexibility, fluency), and the total degree in order to make the comparison between the four groups (two the control groups and two experimental groups). The *fluency* grade is be measured by studying the number of answers of each question of the six items after deleting the repeated answers and the answers that are not related to the test question. For measuring *flexibility* knowing the number of varieties of the kinds of responses for each test question is used. The *originality* degree is measured by giving one grade for each answer. The average repetition was lower than 5%. Then the total degree was measured by collecting the total score of flexibility, fluency, and originality based on the six questions.

The following abbreviations (F), (T), (O) are used to stand for fluency, „flexibility „and „originality“. Six activities were given to the participants. For each activity the three dimensions were evaluated. After the activity is completed the results were summarized. They are placed on the specified position for every subtest and on the specified place in the list/ or students“ answers form. The corrector hence calculates all the grades of each section of (fluency, flexibility and originality), thus, the total mark of every section appeared and the three total marks are added to get the final grade of the test.

In detail, to measure *Fluency*, the total number of correct questions or answers given by the participant was calculated. Any wrong and/ or repeated answers were deleted. Originality“ was measured by recording all of the students' answers and then given (one mark) for the unrepeated answers and (zero) for the repeated answer (as stated in the modifications of assessment1990 of the test where there is a scale of (1-5) for „originality“. According to this scale, marks are allocated according to the percentage of repetition of the answer. So, answers with very low repetition are given the highest mark (5). The grade of „flexibility“ was measured in regards of the number of types of answers for every question. One point was given for each category used. When a category is repeated no credit was given. Such answers are compared with some model answers given as samples of ideal answers found in the test assessment guide.

### **3.5.2 Piers-Harris 2 Self –Concept Scale**

The second instrument that the researcher adapted for this study is Pears & Harris 2 SC Scale (2002) (Second Edition) on the Arabic culture and in order to measure the SC of the low achievers in Jordan. This scale is considered as one of the most popular scales of measuring the SC of low achievers because of the easiness of reading its items and comprehension (Bear & Minke, 2000). Although Piers-Harris 2 (2002) is a useful instrument, it cannot by itself provide a comprehensive evaluation of a child's SC. Such an evaluation is a complex task requiring clinical sensitivity and familiarity with the applicable research literature. In making clinical judgment concerning Piers-Harris 2, users should be prepared to integrate other sources of data, which may include clinical interviews with the child and other informants, prior history, school records, classroom observations, and results from other psychological tests. Users should also be prepared to confer with outside consultants and referral sources as needed.

#### **3.5.2.1 Content of Piers-Harris 2 Self –Concept Scale**

Piers-Harris 2 SC Sub-Scales consists of six major dimensions. It is as follows:

- (1) Behavior Adjustment (BEH)
- (2) Intellectual and School (INT).
- (3) Physical Appearance and Attributes (PHY)
- (4) Anxiety (FRE).
- (5) Popularity (POP)
- (6) Happiness and Satisfaction (HAP).

The Piers-Harris 2 (2002) is a 60-item self-report questionnaire, subtitled *The Way I Feel About Myself*. It is designed for administration to children who are at least 7 years old and have at least a second-grade reading ability. The measure can be used with adolescents up to 18 years of age. Piers-Harris 2 items are statements that express how people may feel about themselves. Respondents are asked to indicate whether each statement applies to them by choosing yes or no. Several methods of administration are available: Piers-Harris 2 Auto Score <sup>TM</sup> Form (WPS Product No.W-388A) which is completed by the child and scored manually by the test administrator; mail-in and fax-in forms (WPS Product Nos. W-388C and W-388Z), which are completed by the child and submitted to WPS for computer scoring and report generation; PC program (WPS Product No. W-388Y), which can generate a report based on either online administration or offline data entry; and the Spanish Answer Sheet (WPS Product No. W-388E), that completed by the child, and answers are then transcribed into an Auto-Score <sup>TM</sup> Form by the examiner. Using any of these methods of administration, most respondents can complete Piers-Harris2 in 10 to 15 minutes.

Piers-Harris 2 (2002) measurement tool includes the same SC and Validity scales as the original Piers-Harris. The SC scales comprise the Piers-Harris 2 Total (TOT) score, which is a general measure of the respondent's overall SC, and the six dimensions or (domain scales) which assess specific components of SC. The domain scales include Behavioral Adjustment (BEH), Intellectual and School Status (INT), physical Appearance and Attributes (PHY), Freedom from Anxiety (FRE), popularity (POP), and Happiness and Satisfaction (HAP). (On the original Piers-Harris, the Freedom from Anxiety scale was labeled Anxiety and the Behavioral Adjustment scale was labeled

Behavior. All other scale names are unchanged from the original instrument.) The SC scales are scored so that a higher score indicates a more positive self-evaluation in the domain being measured. Piers-Harris 2 Validity scales include the Inconsistent Responding (INC) index, which is designed to identify random response, and the Response Bias (RES) index, which measures child's tendency to respond yes or no irrespective of item content.

The most important feature of Piers-Harris 2 (2002) is its incorporation of new, nationally representative normative data. The new norms are based on a sample of 1,387 students, aged 7 to 18 years, who were recruited from school districts all across the United States. The sample closely approximates the ethnic composition of the U.S. population Bureau (2001a) (cited in Piers-Harris 2 2002)). The new standardization sample is a significant improvement over the sample used to norm the original Piers-Harris. That sample was recruited in the early 1960s from a single public school system in rural Pennsylvania, and was relatively homogenous in terms of ethnicity and several other key demographic variables. In addition, the original Piers-Harris 2 sample consisted of 4<sup>th</sup> through 12<sup>th</sup> graders. Piers-Harris 2 sample included 2<sup>nd</sup> and 3<sup>rd</sup> graders as well.

The second major enhancement in Piers-Harris 2 (2002) is the reduction of the scale from 80 to 60 items. This item reduction shortens administration time significantly, while retaining all of the SC and validity scales from the original Piers-Harris2. The deleted items included those of relatively less psychometric value, as well as those written in outdated language that was difficult for many children to understand. The

revised scales are psychometrically equivalent to their counterparts in the original measure.

A third substantial change in Piers-Harris 2(2002) involves the microcomputer administration and scoring program. WPS offers a variety of computer services for many of its products. The “Computerized Services for Piers-Harris 2” section at the back of this manual provides information about the options available for Piers-Harris 2. The software has been updated for the latest version of the Microsoft Windows operating system, with an attractive new graphical user interface. In addition, the computer report has been streamlined and updated to reflect the new normative data.

This manual includes several new enhancements, including a revised section on interpreting the test that incorporates three new case studies. Furthermore, the manual now includes a topic-by-topic inventory of existing Piers- Harris studies to facilitate further research on the scale. Piers-Harris 2 (2002) is the appropriate measurement for any kind of research whether educational, or clinical setting that requires efficient quantitative assessment of children's reported SC. The original Piers-Harris 2 gained widespread acceptance among researchers, as reflected in an extensive scholarly literature that has accumulated over the past four decades. The instrument has been used to evaluate psychological and educational interventions, to investigate the relationship between SC and other traits and behaviors (e.g., empathy, teenage pregnancy, drug and alcohol use), and to monitor changes in SC over time, among many other research projects.

Because it is easily administered to groups, Piers-Harris 2 (2002) can be employed as a screening device in classroom to identify children who might benefit from further psychological evaluation. Piers-Harris 2 can also be used in individual clinical assessments of children and adolescents. The SC scales can be used to generate hypotheses for clinical exploration, as well as to guide clinicians in choosing among possible interventions and formulating referral questions for further psychological testing.

#### **3.5.2.2 The Translated Piers-Harris 2 Self –Concept Scale**

For the first stage Piers-Harris 2 (2002), original scale is translated by two language experts to fit the Jordanian environment. The items of the final version were selected and translated for the purpose of this study. The last version included items that insure the objectives of the study. The researcher, then, compared and contrasted these translations, formulated initial items that serve the aims of this study. The final version is validated by the judges and then used for this study to determine the impact of Scamper's strategy ideas in improving SC among low achievers who participated in this study, compared with their peers with learning difficulties who have not received training on SCAMBER strategies. These dimensions are consisted of six sections. Each section includes 6 items. Therefore the number of items is 60 statements. The subjects were asked to respond to each statement and select one of the following choices: (a) Yes (b) No. The following section presents the validity process of the instruments.



### **3.5.2.3 Validity of the translated Piers-Harris 2 Self –Concept Scale**

To assure the validity Piers-Harris 2 Scale (2002), the researcher submitted the test to a panel of judges. It included 4 professors, 3 specialists in the University of Jordan and 5 school resource rooms“ teachers in order to ascertain the veracity of the content to fit with low achievement in the environment of Jordan. In the second step Piers-Harris 2 Scale is also translated by a language translator. After translation the final version has shown to the same panels to ensure that all misconception types (alternative concepts) under study were covered by test items.

### **3.5.2.4 Scoring of Piers-Harris 2 Self –Concept Scale**

This study adopted the standardized manual scoring Piers-Harris 2 scale. Piers-Harris 2 (2002) can be administered and scored by teachers and other trained professionals. However, ultimate responsibility for its use and interpretation should be assumed by a professional with appropriate training in psychological assessment. Before administering Piers & Harris2, potential users should read this manual to become familiar with the theoretical rationale, development, standardization, and psychometric properties of the measure.

As with many self-report measures, users should keep in mind that the intent of Piers-Harris 2(2002) is readily apparent to most children and adolescents. For this reason, the responses may be subject to conscious and unconscious distortion, usually in the direction of greater social desirability. The issue of response validity is addressed in greater detail in chapter 3 of this manual.

To determine the Inconsistent Responding (INC) index raw score, review the 15 INC activity pairs listed in the left column of the Scoring Worksheet. Make a check mark in the box next to each pair which the inconsistency conditions are met. For example, for the first pair listed (1) you mark the box only if Item 1 is scored “0” and Item 47 is scored “1” You do not mark the box Item 1 scored “1” and Item 7 is scored “0,” even though that also appears to be an inconsistent pair of responses. Count the number of check marks you make, and enter that number in the space labeled INC at the bottom of the Scoring worksheet (2). In this example, the inconsistency conditions were met for one pair: Item 5 was scored “0” and Item 43 was scored “1,” so a check mark was made in the box for this pair. The INC raw score in this example was 1.

To calculate the Response Bias (RES) index raw score the number of circles that appear in the “yes” column was counted .Then this was in the space labeled RES at the bottom of the Scoring Worksheet (3). In the example, 21 items were answered yes, so the RES raw score is 21.

The SC raw scores included the Piers-Harris 2 Total (TOT) score and the six domain scale scores: Behavioral Adjustment (BEH), Intellectual and School Status (INT), Physical Appearance and Attributes (PHY), Freedom From Anxiety (FRE), popularity (POP), and Happiness and Satisfaction (HAP), To obtain the raw TOT score, the number of items for which “1” is circled on the Scoring Worksheet will be counted and then this number will be entered in the space labeled TOT (4) at the bottom of the page. In the example, 52 items are scored “1,” so the TOT raw score is 52.

To determine the raw scores for the six domain scales (in Piers-Harris 2 Total (TOT) scores that mentioned in the previous lines), locate each item for which a “1” has been circled was first located and then the corrected mark is entered in the box (es) in the same row as that item. In Figure 1, “1” is circled for Item 12, so the two boxes in its row are checked (5). Then the number of check marks that have made in the columns that correspond to each domain scale was counted. Then these totals were entered in the appropriate spaces at the bottom of the Scoring Worksheet. In the example, 14 items are checked in the BEH scale column, so this total is entered in the corresponding space (6).

Transfer the validity and SC raw scores from the Scoring Worksheet to the corresponding spaces at the bottom of the profile sheet (7). Circle the value in each column that corresponds to the raw score have entered at the bottom. Then the circled scores were connected to plot the profile. The T-score and percentile rank for each raw score can be found along the left and right margins of the profile sheet, in the same row where the circled raw score appears. The T-score for the Validity and SC scales was entered in the appropriate spaces at the bottom of the page. In figure 1, the TOT raw score is 52, so this value has been circled in the TOT column (8). The corresponding T-score is 56, and has been entered below the raw score for TOT at the bottom of the profile (9).

Plotting the T-score on the profile sheet allows the examiners to see at a glance whether a child's scores are in the normal range, which is usually considered to be within 1 standard deviation of the mean. Because T-scores are standard scores with a mean of 50 and a standard deviation of 10, the normal range on the Piers-Harris 2 profile sheet is

considered to be between 40T and 60T. Now after the Piers-Harris 2 test is scored results are ready to interpret.

### **3.5.3 Classroom Observation**

For this study a semi-structured observation was used to observe the two experimental groups who are going to receive the MSBM. Each experimental group was observed. The aim of the observation was to observe the low achiever's behavior toward learning during the treatment. The items in the observation checklist were adapted from Piers-Harris 2 Scale (2002) and Torrance Test (2005). The items in the checklist are divided between three dimensions of CT i.e.(a) Fluency (b) Flexibility (c) Originality and six dimensions of SC i.e. (a) Behavior (b) Academic &Cognitive (c) Physical Appearance (d) Worries (e) The Social Direction (f) Happiness &Satisfaction. In addition, any other incidents or occurrences that the researcher deemed to be valuable to the study were recorded in notes. The observational checklist was also translated to Arabic by language experts. The researcher then prepared the translated items and the final version was shown to educational psychology experts to validate the contents.

#### **3.5.3.1 Validity of Observation**

To assure validity of the classroom observation, the translated version was shown to panel consisting of 4 professors in the university, 3 educational experts and 5 resource room teachers to validate the content of the checklist observation and to examine if the contents in the checklist are measuring the aims of the study. In light of their feedback, necessary adjustments were made to three items, the instrument in its final version included 14-items, (7) items for: SC scale and (7) items for CT scale.

### **3.5.3.2 Reliability of Observation**

In this study reliability was secured for the observation with the help of an inter-rater. To estimate this reliability, two resource room teachers was trained and was asked to use the observation checklist, record objectively and identify if the students understood the concepts taught and enjoyed the teacher's teaching and then to get the required results out of the observation checklist. The researcher moved between the two experimental groups to follow the steps of teaching the module. At the end of the class, the researcher discussed the whole results with the two teachers who participated in the observation process to determine the behaviors of the student. The data that collected from the classroom observations was recorded in the checklist data recording sheet. The classroom observation was conducted throughout the time the modified based- strategy module was being receiving by the treatment groups. Once the observations are recorded discussions between the researcher and the two observers concerning the identified items in order to compare the results was carried out.

### **3.6 Reliability of the Instruments**

Reliability means the consistency with which a test measures the same thing. Therefore, there are three aspects to reliability: the circumstances in which the test is taken, and the way in which it is marked and uniformity of the assessment it makes. AL-Shanti (1983) for example, studied using the tests for differentiating the members of the study who are highly creative individuals from the low creative individuals. The researcher found that the measurement of the Cronbach alpha was 0.59. In addition, the connecting factors of teaching considerations and the students' performances are 0.70, measured through Cronbach alpha.

Nashwani (1985) measured the test stability on a sample of 84 female and male students. He used the method of dividing the formula of Spearman Brown. The resulted stability factor of originality was 0.72, Fluency factor was 0.66, and the Flexibility factor was 0.64 measured through Cronnbach Alpha. Moreover, he measured the stability factor for the total degree of Torrance CT Test applying the formula of Cronnbach Alpha of 0.83.

Since one of the aims of this study is to examine the level of CT that includes the three components (fluency, flexibility and originality), Torrance CT Test (1987) that measures 3 components: the performance of flexibility, originality and the total degree that represents the performance of these three components was used. The study adapted Nashwani (1985) study's measurement in order to know the effect of the strategy of CT of the modified strategy-based module in developing the level of CT in the low achieving students who participated in this study.

Reliability of Piers & Harris<sup>2</sup> Scale (2002) and Torrance (1987) was estimated by a method called test-retest reliability. It involved administering the same test twice to a group of low achievers in another resource room within few days. This statistical method was adopted in order to obtain the reliability index of both Piers-Harris 2 Scale and Torrance. The reliability coefficient using test-retest for the instruments' scales and total is shown in Table 3.4 and Table 3.5 in the following section.

### 3.6.1 Reliability of Torrance Creative Thinking Test

To test the reliability of the items in the Torrance, the test was administered to 5 (n-5) low achievers studying in the resource rooms in the academic year 2011 at Al-Mafareq in Jordan before receiving the treatment. The test was administered again to the same 5 low achievers after one week to obtain the reliability. The instructional content was delivered through the MSBM. Person's coefficient correlation of fluency was (0.96), and of flexibility was (0.93). As for the skill of originality, one subtest was randomly chosen which the fourth test was. The assessment of the skill of originality was repeated for all students. Here, Person's coefficient correlation was (0.90). The total items of the test have reliability of Cornbrach's alpha (0.93), indicating a high degree of consistency in measuring awareness. It can be said that the correlation grades that were used to identify the relationship between the first and the second assessments were relatively high. This indicates that there was a good constancy in assessing the test. Similar analysis was performed by Nashwani (1985). Table (3.4) shows the reliability coefficient for Torrance scales.

**Table 3.4:** Reliability Coefficient of Torrance

Dimension Name	Reliability Coefficient
Fluency	0.96
Flexibility	0.93
Originality	0.90
<b>Total</b>	<b>0.93</b>

### 3.6.2 Reliability of Piers-Harris 2 Self –Concept Scale.

To assure reliability of Piers-Harris 2 Scale (2002), the test was first administered to the same 5 low achievers (n=5) in the second semester of the academic year 2010/2011 at Al-Mafareq in Jordan. The instructional content was delivered through the MSBM. The same test was then administered after one week to the same sample.

Person's coefficient correlation Behavior adjustment (BEH) was (0.84), Intellectual and school (INT) was (0.87), Physical appearance and attributes (PHY) was (0.83), Anxiety (FRE) was (0.81), Popularity (POP) was (0.79), Happiness and Satisfaction (HAP) was (0.81). The total items of the test have reliability Cron-bach's (0.89), indicating a high degree of consistency in measuring awareness. This indicates that there was a good constancy in assessing the test. Similar analysis was performed by (Bear & Minke, 2000). The reliability coefficient using the test-retest for Piers & Harris2 Scale is shown in table (3.5).

**Table 3.5:** Reliability Coefficient of Piers & Harris 2 Scale

Dimension Name	Reliability Coefficient
Behavior adjustment (BEH)	0.84
Intellectual and school (INT)	0.87
Physical appearance and attributes (PHY)	0.83
Anxiety (FRE)	0.81
Popularity (POP)	0.79
Happiness and Satisfaction (HAP)	0.81
<b>Total</b>	<b>0.89</b>



### **3.7 Teaching Materials**

This section presents the materials used for teaching the experimental group and the control group. The materials were: the CUSBM which was received by the control groups and the MSBM which was taught to the experimental groups during the treatment.

#### **3.7.1 The Modified Strategy -Based Module**

The MSBM is based on the components from CoRT1 & CoRT4 and SCAMPER programs. The researcher has combined the components from both programs and modified them to match the Arabic culture. This teaching module is integrated it may lead low achievers to develop their level of SC and CT.

The MSBM consists of 20 lessons selected from CoRT1 and CoRT4 and 10 games from SCAMPER which include drills. The lessons and the games that the MSBM includes are as follows:

- (a) Ten games from The SCAMPER program and their drills. The games are: Eighth day of Week, Sight and Sounds, Upside Down and All Around, Brown Paper Bags, Dogs and Cats, Mind shower, Leap Before you look, Oops!, Room for the Future, Handy Randy, the Space Age Robot and 2070 Script writer.
- (b) Twenty lessons that selected from CoRT1 and CoRT1. Each component includes 10 lessons. The lessons from CoRT 1 are: PMI: The Treatment of Ideas, CAF: The Factors Involved, RULES, and C&S: Consequences, AGO:

Objectives, PLANNING, and FIP, and APC: Alternatives, DECISIONs and OPV: Other Peoples View. Lessons from CoRT4 are: Yes, No and Po, Stepping Stone, Random Input, Concept Challenge, Dominant Idea, Define the Problem, Remove Faults, Combination, Requirements and Evaluation.

The MSBM follows steps for teaching the lessons. The duration time of each lesson is 45 minutes for the experimental student-groups combined with the games. The steps are as follows: objective of each lesson, the roles of both the teacher and students in using the teacher card and student card. The teacher card includes introductory attitude and solved problems whereas the student card includes the drills. The last step deals with the homework sheet.

#### **3.7.1.1 Validity of the Modified Strategy -Based Module**

To assure the validity of the MSBM, the module is submitted to a panel of judges, including 4 professors in the university, 3 educational experts and 5 resource room teachers in order to obtain their comments and suggestions on the components of the module. Validation was conducted on two stages; the researcher first designed the entire instructional material considering the MSBM based on CoRT 1, CoRT 4 and SCAMPER Programs. The first version was sent by the researcher to the experts and specialists in education asking to assess face, content and construct validity in terms of clarity of objectives, and how best the module represents instructional content of the level of SC and CT of the sixth grade low achievers in the resource rooms. Experts were provided their opinions regarding how the lessons preparation complies with procedures

followed with steps of each lesson. The researcher received the feedback from all experts and adopted their notes, and suggestions. The module then translated to Arabic.

In the second validation stage, the translated MSBM was resent to experts and asked their expert opinion once again the same as in the first stage. The researcher upon receiving their opinions and notes made the necessary changes. Their comments were taken into consideration and used to establish the content validity of the MSBM. Table 3.6: shows the participants distribution to the teaching materials. The recommendations and suggestions from the experts are as follow:

- (a) The use of suitable pictures in every drill in such a way that these pictures constitute a source of motivation that attracts the attentions of the student and supports his/her comprehension through visual cognition and the involved sense.
- (b) Introducing the drills in a new order.
- (c) Giving an introductory story or attitude:
- (d) Using examples related to the students' environment.
- (e) Using drills: done by students whether in groups or individually.
- (f) Homework: This is a new item created to increase the effect of learning and to generalize the benefit. That is, students do some additional drills at home and show their homework to their teacher later on. In his turn, the teacher gives the suitable feedback.

(g) Using Cards by both teacher and student

(1) Teacher card includes:

- (a) Skill definition: This helps the teacher to understand what 'skill' is and what components it has.
- (b) What students learn of 'skill'? i.e., the goals which should be realized by students, an attitude or a short story suggested by the researcher. This should be delivered by the teacher and the students are required to conclude the importance of 'skill' and its applications.
- (c) An example suggested by the researcher to help the teacher clarify how a skill is applied by students.

(2) Student card includes three drills:

- (a) The first drill: This is a general drill to be done by all groups of students with the help of the teacher.
- (b) The second drill: This is a general drill too, but it is done by the groups of students without the help of the teacher.
- (c) The third drill: This is an individual drill to be done by every student individually.

In the homework sheets, these are individual drills to be done by every student at home. The teachers role is also will assess every home work and provide the subjects with needed feedback.

**Table 3.6:** The Participants’ Distribution to the Teaching Materials

<b>Teaching Materials</b>	<b>Groups</b>	<b>Number</b>	<b>Total</b>
CUSBM	2 control groups	40 males 40 females	80
MSBM	2 experimental groups	40 males 40 females	80
<b><i>Total</i></b>	<b><i>4 groups</i></b>	<b><i>160</i></b>	<b><i>160</i></b>

### **3.7.2 Currently Used Strategy-Based Module**

It is an educational program which is designed by the Jordanian ministry of education for grade six. The CUSBM is used for the Jordanian students. It is combined the teaching of all the subjects. It is used by the teachers to conduct their teaching. The teachers use the blackboards. No detailed examples and drills are given to teach low achievers. The games for developing CT are not enough. The exercises and examples are not linked with pictures to attract the students’ attention and then develop low achievers’ CT and SC. Group work activities are less used and the teacher guides most of the activities. CT is a design to create. However, the CUSBM prohibits creativity due to the idle methods it follows (Albadareen, 2006).

## **3.8 Pilot Study**

The aim of conducting the pilot study was to examine whether the instruments were understood by the subjects and to know the amount of time required by the subjects to complete the tests. The instruments of this study were tested for clarity and precision in a pilot study in order to measure how the instruments work in practice, what amendments are needed to its language and also to assess the difficulty of particular

questions and time it took to respond. In order to assure the reliability of the tests, the tests were applied to a group of low achievers who had the same background as the participants of the main study academic year 2011/2012.

### **3.8.1 Sample of the Pilot Study**

The pilot study was conducted on a group of low achievers who have similar characteristics of the selected samples for the main study at Almafraq governorate in the academic year 2011 /2012. The number is 20 (10 males and 10 females). It was during this phase the reliability of the instruments established. The subjects were placed in four groups (males and females). Two groups (10 males and females) are selected as experimental groups and the other two groups (10 males and females) as a control groups. The pilot study was performed by the researcher with the help of the same four teachers who taught the sample in the main study.

The purpose of the pilot study was to test the item difficulty, the amount of time required by the subjects to do the tests. The pilot study helped the researcher to gain more knowledge in coding the items observed. The results of the pilot study gave the researcher an idea about the possible questions which could be raised by the real population of the study.

### **3.9 Data Collection Procedures in the Pilot Study**

Data was collected within four weeks throughout the following phases in the pilot study. Pre-tests were administered a week before the instruction and post-tests were completed four weeks after the instruction.

#### **3.9.1 Phase One**

The administration of the measurement instruments was done in two days. The pre-test of this study included the implementation of the two instruments (Torrance and Piers & Harris<sup>2</sup>) in order to measure the level SC and CT of low achievers and compared their scores before and after applying the programs. In the first day Torrance test was administered to the four groups while Piers-Harris 2 was administered in the second day as pre-tests. The students were allowed to ask questions to clarify the testing procedures through the duration of the tests. The researcher tried to clear the items that were not clear.

#### **3.9.2 Phase Two**

After the pre-tests, the experimental groups received the treatment for four weeks while the control groups did not. The experimental groups were taught by the MSBM (The MSBM is based on the components from CoRT1 & CoRT4 and SCAMPER programs). and the control groups were taught by the current used program. According to Bob Eberle (1987), CoRT1 & CoRT4 and SCAMPER programs involve an average of 4 weeks of daily training, and the control groups were taught by the current used program. The two components are complementary of each other and run concurrently. The researcher and two resource room teachers used the observation checklist to observe

the two treatment groups. The observations were carried out by two resource room teachers and the researcher. They recorded the implementation of the MSBM. The end of the session the researcher discussed the results with the two teachers.

### **3.9.3 Phase Three**

After the four weeks the four groups were given the post-tests i.e. (Torrance and Piers-Harris 2) to measure the level of SC and the level of CT after the treatment.

### **3.10 Training for Teachers**

In advance to the practical implementation of the study, 2 male and female teachers from the resource rooms exposed to training for one week. The purpose of such training was to assist the teachers to master the treatment teaching module i.e., the MSBM. Regular classroom visits were scheduled by the researcher in coordination with the Directorate of Education, school administrations, and teachers to follow-up the actual implementation of the study in the classroom.

### **3.11 The Procedure of Research**

The procedure to conduct the study includes the following:

- 1) Obtained permission from Universiti Sains Malaysia.
- 2) Obtained permission from the Ministry of Education in Jordan in order to start the application of the study for the sixth grade students with low achievements in the Jordanian Resource Rooms at Al-Mafraq Governorate.



- 3) Selected the sample from the population, and assigning participants to the two teaching modules based on the steps discussed earlier of this chapter.
- 4) Provided training to teachers in treatment groups on how to implement the MSBM, in coordination with the Resource Rooms administrations at Al-Mafraq governorate.
- 5) Provided instructions to teachers in treatment groups on how to use the observation checklist.
- 6) Implemented the study instruments (Piers & Harris 2 and Torrance tests) to classify participant students based on their learning achievement before the actual teaching based on the MSBM.
- 7) In advance to the actual practical implementation of the MSBM, Piers & Harris 2 and Torrance tests were administered as pretest to all study sample students for the purposes already cited.
- 8) Following completion of teaching of the MSBM to experimental groups. Piers-Harris 2 and Torrance tests were re-administered once again as a posttest to all groups of study sample,
- 9) (SPSS) program was used to make the suitable statistical analyses to conclude findings.
- 10) Interpretation, discussion, and comparison of results, results from other studies and then suggesting recommendations.

### **3.12 The Main Study**

The data of the main study was collected between the last two weeks of November 2011 and the first two weeks of December 2011 at Al-Mafaraq governorate in Jordan. The same procedure that followed in the pilot study in terms of administration of the instruments was followed with the participants of the main study.

#### **3.12.1 Data Collection Procedures in the Main Study**

The research instruments were collected between October 2010 and November 2011 at Al-Mafaraq governorate in Jordan. It was collected in three phases and in four weeks.

##### **3.12.1 (a) Phase One**

The administration of the measurement instruments was done in two days. The pre-test of this study included the implementation of the two instruments (Torrance and Piers-Harris 2) in order to measure the level of SC and CT of low achievers and compare their scores before and after applying the programs. In the first day Torrance test was administered to the four groups while Piers-Harris 2 was administered in the second day.

##### **3.12.1(b) Phase Two**

After the pre-tests, the experimental groups had the treatment for four weeks while the control groups did not. The experimental groups were taught by the MSBM. (The MSBM is based on the components from CoRT1 & CoRT4 and SCAMPER programs). The control groups were taught by the current used program. According to Bob Eberle (1987), CoRT1 & CoRT4 and SCAMPER programs involve an average of 5

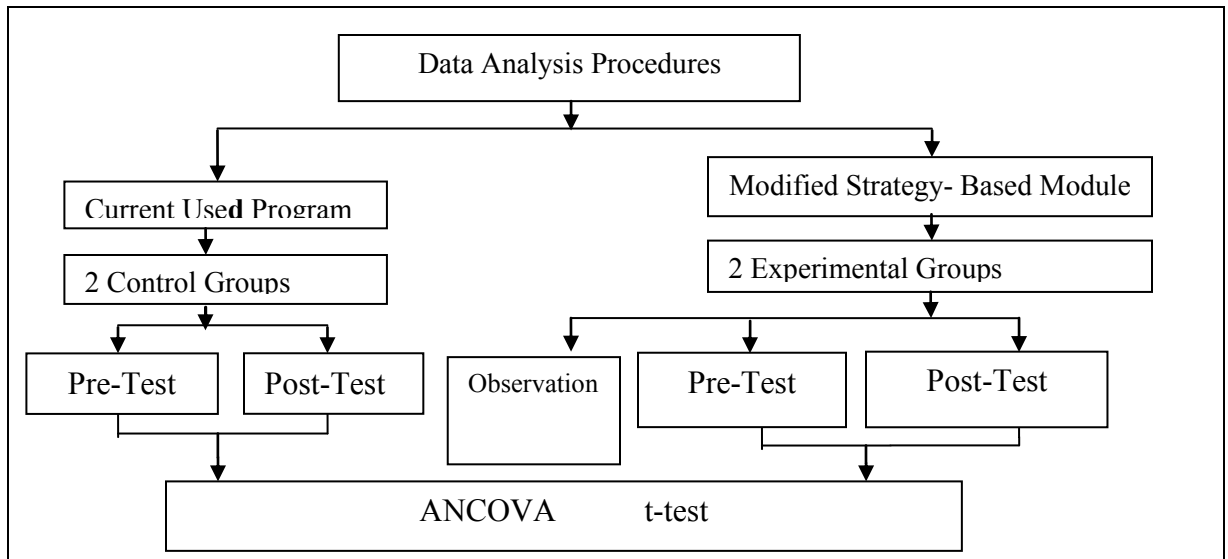
weeks of daily training. The observations were carried out by two resource room teachers and the researcher. They recorded the implementation of the MSBM. The end of the session the researcher discussed and compared the results with the two observers.

#### **3.12.1 (c) Phase Three**

After the implementation of the MSBM, the same instruments (Torrance and Piers-Harris 2) were distributed as post-tests to measure the low achievers' academic performance after the treatment. The tests were administered in two days. The time that allowed to each test was 40 minutes.

#### **3.13 Statistical Analysis**

In order to achieve the objectives of this study, the study used the SPSS program version 16. The descriptive analysis was used to investigate the pre-tests results of CT and SC for Jordanian low achievers. Moreover, the descriptive analysis was used to investigate the post-test of CT and SC for Jordanian low achievers. In addition, the reliability coefficient method was used to compare the results in pre and post-tests, whereas, the two way ANCOVA analysis was used. An examination by t-test of differences between groups generally was also used.. Figure 3.2 shows the data collection procedure.



**Figure 3.2:** Method of Analyses

### 3.13.1 Analysis of Research Questions

Table 3.6 shows the research questions, instruments, data source, and the data analysis method that would be used.

**Table 3.7:** Analysis of Research Questions

Research Question	Data Sources	Instruments	Data Analysis Method
1. What is the effect of applying Modified Strategy-Based Module on the level of creative thinking of the Jordanian low achievers?	160 low achievers	Pre- Post -test Torrance Test	Descriptive , frequency
2. What is the effect of applying Modified Strategy-Based Module on the level of self-concept of the Jordanian low achievers?	160 low achievers	Pre- Post -test Piers-Harris 2 test & Harries test	Descriptive , frequency At the end of the observation, the observer will discuss with the two experts to record the skills and procedures used in the reading lesson. Then the overall rate of response of the subjects will be calculated
3. Is there a significant difference between the male and female low achievers creative thinking after being trained using the Modified Strategy-Based Module?	160 low achievers divided into 4 groups+ teachers	Observation Torrance Test Interview	Percentages Independent sample t-test
4. Is there a significant difference between the male and female low achievers self-concept after being trained using the Modified Strategy-Based Module	160 low achievers divided into 4 groups	Observation Piers-Harris 2 test & Harries test & Interview	Percentages Independent sample t-test
5. .Is there a significant interaction effect between types of teaching modules and low achievers gender" post-test scores of creative thinking??"	160 low achievers divided into 4 groups	Classroom Observation Torrance Test	Percentages Independent sample t-test
6. Is there a significant interaction effect between types of teaching modules and low achievers" gender on the post-test scores of self-concept?	160 low achievers divided into 4 groups	Classroom Observation Piers-Harris 2 test & Harries Test	Percentages Independent sample t-test
7. Is there a significant difference on creative thinking between the experimental group and control group?	160 low achievers divided into 4 groups	Classroom Observation Piers-Harris 2 test & Harries Test	<b>ANCOVA</b>
8. Is there a significant difference on self-concept between the experimental group and control group?	160 low achievers divided into 4 groups	Classroom Observation Piers-Harris 2 test & Harries Test	<b>ANCOVA</b>

### **3.14 Conclusion**

This chapter has outlined the research approach and methodologies that were used in this study. The study utilized both qualitative and quantitative data collection methods. The data collection methods of testing and observation were used.

## CHAPTER 4

### RESULTS

#### 4.1 Introduction

This study aims at helping low achievers in resource rooms in the primary schools to develop their creative thinking (CT) and self-concepts (SC) by applying a modified strategy-based module (MSBM). The analyses of the collected data were carried out through various statistical techniques such as descriptive statistics ((M)mean, SD), and analytical methods two - way analysis of variance,(two - way ANCOVA and the data were compiled and analyzed using the Statistical Package for the Social Science (SPSS 17) for Windows software. To answer the study hypothesis, (two-way ANCOVA) and t-tests will be used.

Two-way ANCOVA is a general linear model blends with ANOVA and regression. Two - way ANCOVA evaluates whether population means of a dependent variable (DV) are equal across levels of a categorical independent variable (IV), where the pre-test for both dependent variables (CT & SC) were controlled and known as covariates (DV). Therefore, when performing two - way ANCOVA, we adjust the DV means to what they would be if all groups were equal on the DV. T-test was used to answer the  $H_{01}$  and  $H_{05}$  hypothesis, to compare the results of experimental and control groups.

This study deals with two variables (IVs) which are: (1) a Modified Strategy-Based Module (MSBM) and the currently used strategy-based module (CUSBM) and (2) students' gender and two (DVs) which are CT and SC. Two-way ANCOVA, was

conducted to determine if there are statistically significant differences between the mean scores across the two groups, students' gender and the interaction between groups and students' gender. Analysis of the real sample of 160 low achievers was carried out and their descriptive statistics are described below.

## **4.2 Sample Characteristics**

As mentioned in chapter three, the study sample consisted of 160 low achievers in the sixth grade from 8 resource rooms at Al-Mafraq governorate in Jordan. All low achievers were taken from their resource rooms and then randomly assigned to one of the two teaching modules the Modified Strategy-Based Module (MSBM) and the currently used strategy-based module (CUSBM). They were divided into four groups: two experimental groups and controls, 80 were males (50%) and 80 were females (50%).

## **4.3 Descriptive Statistics**

This study provides empirical data of CT and SC among sixth grade low achievers by using two different teaching modules: a Modified Strategy-Based Module (MSBM) and the Currently Used Strategy-Based Module (CUSBM), and using low acheivers' gender as a secondary independent variable. Furthermore, the current study examines the collected empirical data of the two teaching modules, acheivers' gender and their interactions on the dependent variables.

### **4.3.1 Group Distributions**

Table 4.1 shows the distribution of the 160 low achievers enrolled in the study into 2 groups, 80 (50%) in the experimental group trained by MSBM and 80 (50%) in the control groups trained by CUSBM.



**Table 4.1:** Distribution of the Groups based on the Teaching Methods

Group	Frequency	Percent
MSBM	80	50%
CUSBM	80	50%
Total	160	100

#### **4.3.2 Students' Gender Distributions**

Details on the group for all of the genders are tabulated in Table 4.2 below. The results show that there were 80 (50%) of low achievers were male whereas 80 (50%) of low achievers were female.

**Table 4.2:** Distribution of the Groups based on the Gender

Gender	Frequency	Percent
Male	80	50
Female	80	50
Total	160	100

#### **4.4 Statistical Analysis for the Test Scores of the Creative Thinking**

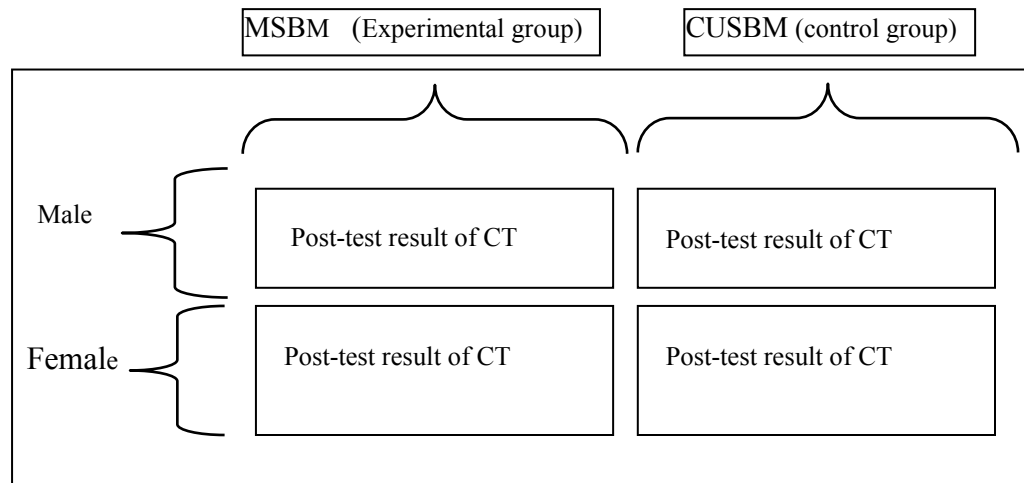
The analysis of the results was divided into two parts: The first part of the study is to investigate the effect of the MSBM on low achievers' level of Creative Thinking (CT). The second part of the study is to investigate the effect of the MSBM on low

achievers' level of Self-Concept (SC). For this reason, a descriptive analysis is conducted as a preliminary analysis in order to identify the mean, maximum and minimum values of the pre-test and post-test scores of CT and SC. Subsequently, the inferential statistical analysis will be conducted in order to answer the research questions. This section presents the first part of the analysis that concerns CT. The questions are:

1. What is the effect of applying Modified Strategy-Based Module on the level of creative thinking of the Jordanian low achievers?
2. Is there a significant difference between the male and female low achievers' creative thinking after being trained using the Modified Strategy-Based Module?
3. Is there a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of creative thinking?
4. Is there a significant difference on creative thinking between the experimental group and control group?

The first main research hypothesis was analyzed using two-way ANCOVA to compare the two adjusted mean scores on CT, (teaching modules and students' gender) and interaction effects of teaching modules and students' gender on one dependent variable (post-test results of CT), while pre-test results of students CT were used as covariate in this analysis. Figure 4.1 below conceptualizes the statistical analysis of two - way ANCOVA which represent the main effects of one independent variable (two

types of teaching modules) and students' gender (Male, Female) on the post-test result of CT when the effects of the pre-test result of the CT are controlled:



**Figure 4.1:** Two-Ways ANCOVA with 2 X 2 Factorial Designs

#### 4.4.1 The Descriptive Statistical Analysis for the Test Scores of Creative Thinking

Table 4.3 shows that the minimum value for the pre-test scores is 57 whereas the maximum value for the pre-test scores is 116. The result of descriptive analysis shows that the minimum value for the post-test scores is 65 whereas the maximum value for the post-test scores is 230. It was found that the mean value for the pre-test scores is 85.33 whereas the mean value for the post-test scores is 149.25. The finding of descriptive analysis shows that there is an increase from the pre-test scores to the post-test scores of the creative thinking.

**Table 4.3:** Values of the Pre-test and Post-test Scores for CT overall Students Involved in the Study (N=160)

	Min.	Max.	Mean	SD
Pre-test	57.00	116.00	85.33	15.48
Post-test	65.00	230.00	149.25	67.79

The finding in Table 4.4 shows that the mean score of the pre-test scores of students who participates in the experimental group is 98.04 whereas in the post-test scores of the same group of students is 216.46. The findings also shows that the mean score of the pre-test scores of students who participated in the control group is 72.63 whereas in the post-test scores of the same group of students is 82.04. Thus, it shows that the increase from the pre-test scores to post-test scores of the students who participated in the experimental group is higher than the students who participated in the control group.

**Table 4.4:** Values of the Pre-test and Post-test Scores for CT for Experimental Group and Control Group

Group	Measure	N	Min.	Max.	Mean	SD
Experimental	Pre-test	80	74.00	116.00	98.04	9.28
	Post-test	80	188.00	230.00	216.46	7.12
Control	Pre-test	80	57.00	95.00	72.63	8.31
	Post-test	80	65.00	99.00	82.04	7.04

#### 4.4.2 Descriptive Analysis based on Low Achievers' Gender

Table 4.5 shows the results that indicate the mean on the pre-test for the males in the experimental is 96.11 and post-test 215.75. The difference between the means is  $(215.75 - 96.11 = 119)$ , while the mean on the pre-test to the same gender in the control group is 77.95, and post-test 84.30. The difference between the means is  $(84.30 - 77.95 = 6.35)$ . Thus, it is suggests that the increase from the pre-test scores to post-test scores of the male students who participates in the experimental group is relatively higher than the male students who participated in the control group. On the other hand, the difference in the mean of the pre-test for female students in the experimental group is  $(217.18 - 99.98 = 117.2)$ , while the difference between the same gender in the control group between the pre-test and the post-test is  $(79.78 - 67.30 = 12.48)$ .

**Table 4.5:** Values of the Pre-test and Post-test Scores for Low achievers' CT according to Gender

Group	Gender	Measure	N	Min.	Max.	Mean	SD
Experimental	Male	pre-test	40	74	115	96.11	10.02
		post-test	40	199	230	215.75	7.67
	female	pre-test	40	81	116	99.98	8.16
		post-test	40	188	226	217.18	6.55
Control	Male	pre-test	40	57	95	77.95	8.44
		post-test	40	65	99	84.30	8.18
	female	pre-test	40	60	74	67.30	3.24
		post-test	40	68	90	79.78	4.79

Also it's noticeable the mean on the post-test for the males in the experimental group is 215.75 and it was for the same gender in the post-test in the control group is 84.30 ( $215.75 - 84.30 = 131.45$ ). The means of the post-test for the female in the experimental group is 217.18 and it was for the same gender in the control group 79.78 ( $217.18 - 79.78 = 137.4$ ). The mean difference among the same gender in both experimental and control group reveals that small differences, which need further testing.

#### 4.5 The Assumption two-way ANCOVA Analysis Procedure

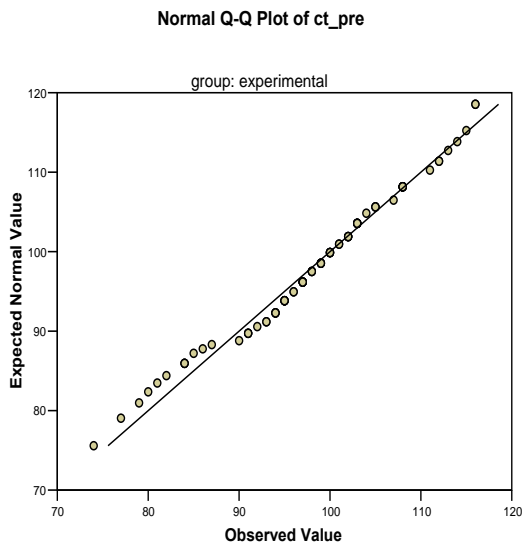
Before two-way ANCOVA is conduct, several analyses are done in order to check the assumption associates with normality, linearity, and homogeneity of the distribution. In designing the study, it is ensured that the covariate (Pre-test of the CT) is measured prior to the treatment which is the teaching method Pallant (2007). This is to avoid scores on the covariate from being influence by the treatment.

**Table 4.6:** The Skewness and Kurtosis Value of the Pre-test and Post-test Score for Overall Low Acheivers' Involved in the Study

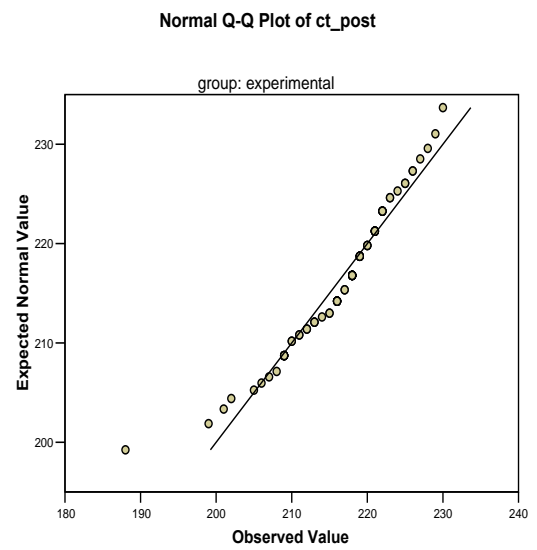
	Pre-test	Post-test
Skewness	0.05	-1.20
Kurtosis	-0.03	-1.95

Based on the range of the value which is suggests by George and Mallery (2000), it is found that the skewness and the kurtosis values is consider closing to zero which is leads to the conclusion that the distribution of the pre-test and post-test scores of the CT

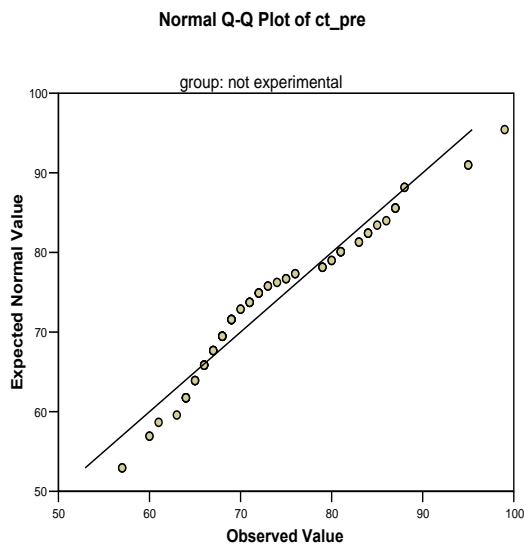
is closing the normal shape Table (4.6), The findings are supports by the result of the Q-Q plot which shows a reasonably straight line (Figures 3,4,5,6). The results of the Q-Q plot suggests that the pre-test and post-test scores of the student CT are normally distributed.



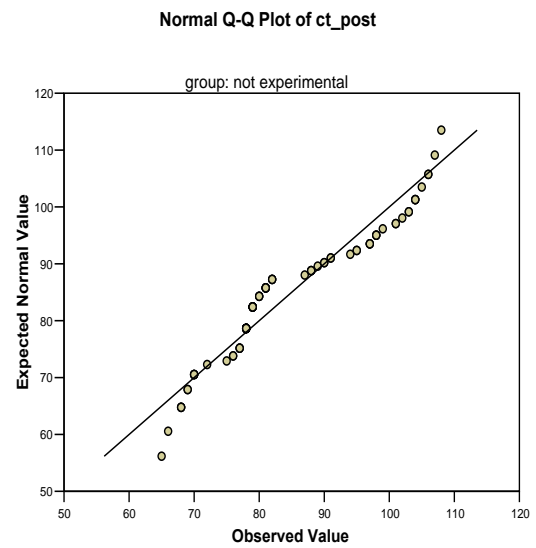
**Figure 4.2:** Q-Q Plot For the Pre-test Scores Of CT



**Figure 4.3:** Q- Q Plot For the Post-test Scores  
Of CT

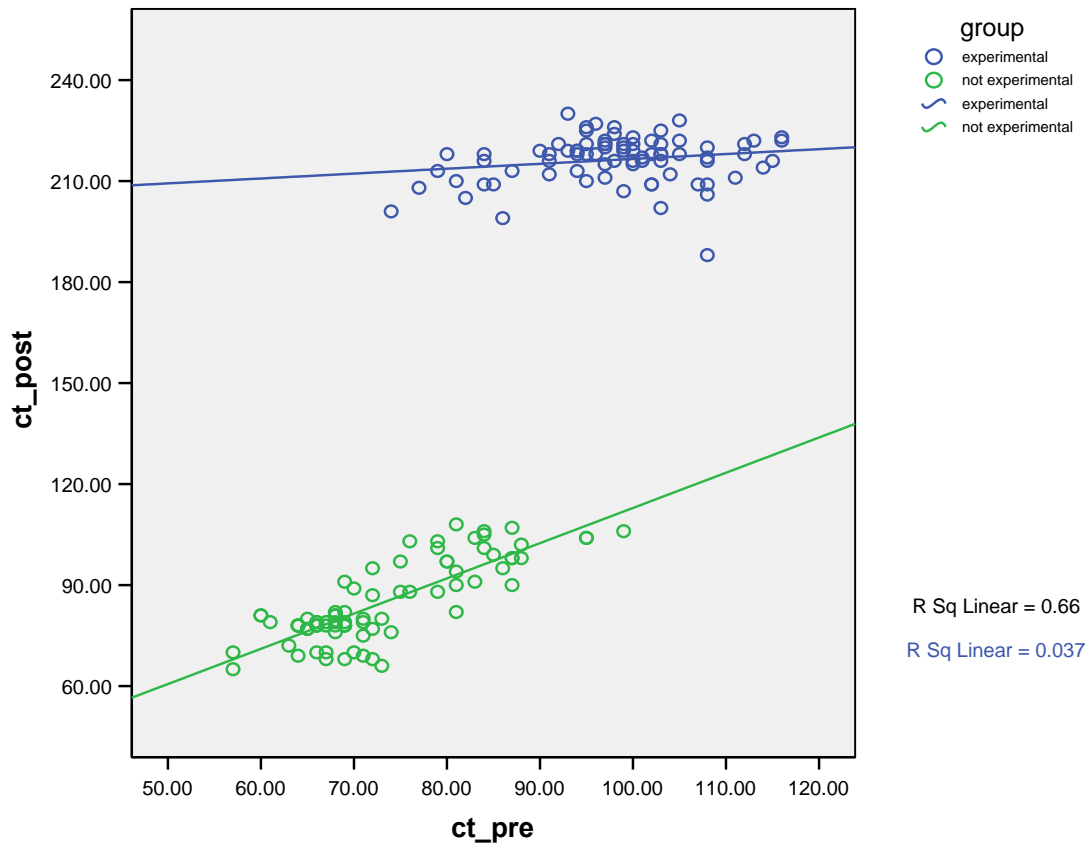


**Figure 4.4:** Q-Q Plot For the Pre-test



**Figure 4.5:** Q-Q Plot For the Post-test Scores  
Of CT





**Figure 4.6:** Scatter Plot of Pre-test and Post-test Score Of CT

Two-way ANCOVA assumes that the relationship between the dependent variable and each of the covariates is linear (straight-line). One of the reasons for including covariates was to increase the power of the analysis of variance test Pallant (2007). Violations of this assumption are likely to reduce the power (sensitivity) of the test. Scatter plots can be used to test for linearity, but these need to be checked separately for both experimental and control groups. The scatter plot appears to be a linear (straight-line) relationship for each group as illustrated in Figure 4.6. Thus, the findings of this study did not violate the assumption of a linear relationship between dependent variable and covariate.

The final assumption of two-way ANCOVA test is related with the homogeneity of regression slopes (Pallant, 2007). This involves checking to see whether there is a statistically significant difference between the experimental and control group. The result of the test shows a non-significant,  $F(1, 157) = 0.087, p = 0.768$ . Therefore, the findings of this study do not violate the assumption of homogeneity of regression slopes for both groups.

#### **4.6 Research Question One**

The first research question for this study enquires the effect of applying a Modified Strategy-Based Module (MSBM) on the level of creative thinking of the Jordanian low achievers. This research question was used to structure hypothesis one.

##### **4.6.1 Null Hypothesis One**

There is no significant differences in the low achievers creative thinking mean score after being trained using the MSBM. In order to test hypothesis ( $H_{01}$ ) using two-way ANCOVA, description analysis regarding group was done and the results are presented in Table 4.7. The finding shows that creative thinking mean score of the pre-test is 98.16 with SD 9.28; while after being trained using the MSBM, the mean result for CT becomes 216.46 with SD 7.12.

**Table 4.7:** Values of the Pre-test and Post-test Scores for Students who Followed experimental group

Mean	N	SD	Std. Error	
Pre-test	98.1625	80	9.28514	1.03811
Post-tst	216.4625	80	7.12092	.79614

To examine the differences between the pre and post-test, paired sample t-test was conducted. Table 4.8 shows the results. The paired t-test value for means differences is (-100.69) with p-value less than  $<0.001$ . This indicates that the post test is significantly higher than the pre test, which means that the use of a strategy-based module (SBM) in training the experimental groups has improved the CT level of the students.

**Table 4.8:** The Results of T-test of both Pre-test and Post-test in Experimental group for the CT

Paired Differences					
Mean	Std. Deviation	Std. Error Mean	t	df	p-value
-118.30	10.50	1.1748	-100.69	79	$<0.001$

#### 4.7 Research Question Two

The second research question for this study enquires whether there is any statistical significant difference( $<0.001$ .) between the male and female low achievers' creative thinking after being trained using the Strategy-Based Module (SBM) This research question was used to structure hypothesis two.

#### 4.7.1 Null hypothesis Two

There is no significant difference in the creative thinking mean score between the male and female low achievers' after trained using the SBM. In order to test hypothesis ( $H_{02}$ ) using two-way ANCOVA, description analysis regarding group was done. Table 4.9 presents the overall means and standard deviations of each pre-test and post-test score for students' gender. The mean scores of the males are ( $M = 215.75$ ) and for females are ( $M = 217.18$ ).

The results from Table 4.9 shows that the creative thinking mean score between the male and female low achievers on the post-test score is not significant,  $F(1, 155) = 0.59$   $p = 0.44$  after pre-test score of students' CT in compare with students in the control group. It can be interpreted that students' gender have no significant effect to the post-test results of students' CT. Therefore,  $H_{02}$  has accepted.

**Table 4.9: The Mean Score and Standard Deviation of the Pre-test and Post-test Scores for CT**

Gender	Measure	N	Mean	SD
Male	Pre-test	40	96.11	10.02
	Post-test	40	215.75	7.67
Female	Pre-test	40	99.98	8.16
	Post-test	40	217.18	6.55

**Table 4.10:** Results of two-way ANCOVA for the CT Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	<i>p</i> -value	Partial Eta Squared
Corrected Model	723677	4	180919.23	3979.00	0.00	0.99
Intercept	22803	1	22803.44	501.56	0.00	0.76
CT-Pre	424	1	423.56	9.32	0.00	0.06
<b>gender</b>	27	1	27.02	<b>0.59</b>	<b>0.44</b>	0.00
group	181928	1	181927.65	4001.00	0.00	0.85
Gender * group	70	1	69.83	1.54	0.22	0.01
Error	7047	155	45.47			
Total	4294814	160				
Corrected Total	730724	159				

Dependent Variable: post

a. R Squared = .87 (Adjusted R Squared = .85)

#### 4.8 Research Question Three

The third research question asks if there is a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of creative thinking. This research question was used to structure hypothesis three.

##### 4.8.1 Null hypothesis Three

There is no significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of creative thinking. In order to test

hypothesis (Ho3) using two-way ANCOVA, description analysis regarding group was done and the results are presented in Table 4.11.

The results from Table 4.11 shows that the main effect of students' gender on the post-test of CT,  $F(1, 155) = 1.54$ ,  $p = 0.22$ . The interpretation of the non-significant interaction effect indicted that all the students (male and female) have the same improvement in their CT.

**Table 4.11:** Results of two- way ANCOVA for the CT Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	<i>p</i> -value	Partial Eta Squared
Corrected Model	723677	4	180919.23	3979.00	0.00	0.99
Intercept	22803	1	22803.44	501.56	0.00	0.76
CT-Pre	424	1	423.56	9.32	0.00	0.06
gender	27	1	27.02	0.59	0.44	0.00
group	181928	1	181927.65	4001.00	0.00	0.85
<b>Gender * group</b>	70	1	69.83	<b>1.54</b>	<b>0.22</b>	0.01
Error	7047	155	45.47			
Total	4294814	160				
Corrected Total	730724	159				

Dependent Variable: post

a. R Squared = .87 (Adjusted R Squared = .85)

#### 4.9 Research Question Four

The fourth research question asks if there is a significant difference on creative thinking between the experimental group and control group. This research question was used to structure hypothesis four.

##### 4.9.1 Null hypothesis Four

There is no significant difference in the creative thinking mean score between the experimental and control groups. In order to test the Hypothesis (Ho<sub>4</sub>) using two-way ANCOVA, description analysis regarding group was done and the results are presented in Table 4.12

**Table 4.12:** Results of two- way ANCOVA for the CT Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	<i>p</i> -value	Partial Eta Squared
Corrected Model	723677	4	180919.23	3979.00	0.00	0.99
Intercept	22803	1	22803.44	501.56	0.00	0.76
CT-Pre	424	1	423.56	9.32	0.00	0.06
gender	27	1	27.02	0.59	0.44	0.00
<b>group</b>	181928	1	181927.65	<b>4001.00</b>	<b>0.00</b>	0.85
Gender * group	70	1	69.83	1.54	0.22	0.01
Error	7047	155	45.47			
Total	4294814	160				
Corrected Total	730724	159				

Dependent Variable: post

a. R Squared = .87 (Adjusted R Squared = .85)

The results in Table 4.12 show that using MSBM had led to statistically significant improvement in students' CT scores much better than control group,  $F(1, 155) = 4001.00$ ,  $p < 0.05$ , with a large effect size (Partial eta squared = 0.85) (Cohen, 1988). The findings can be interpreted that the intervention has a main effects on students' CT. Therefore,  $H_04$  is rejected.

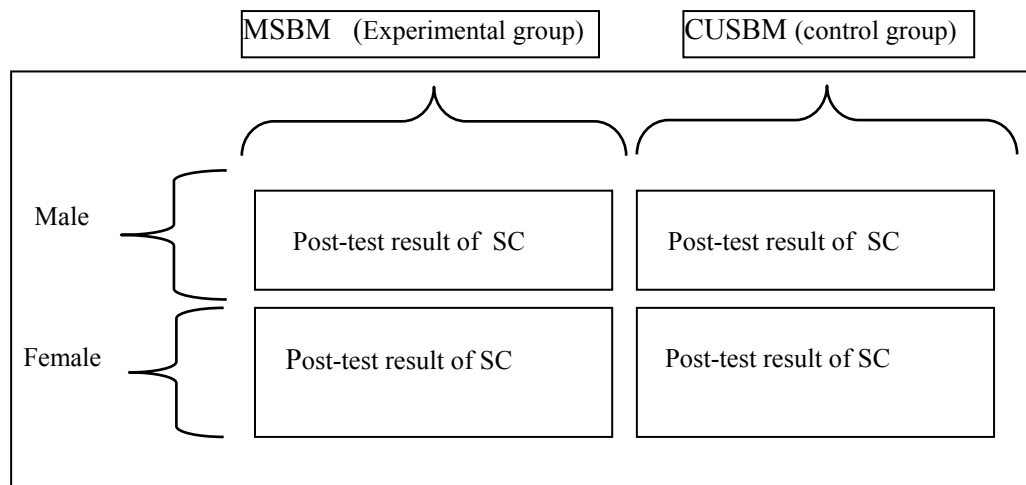
#### **4.10 Statistical Analysis for the Test Scores of self-Concept**

The second part of the study is to investigate the effect of the Strategy-Based Module (SBM) on low achievers' level of Self-Concept (SC). For this reason, the descriptive analysis is conducted as a preliminary analysis in order to identify the mean, maximum and minimum values of the pre-test and post-test scores of low achievers SC, Subsequently, the inferential statistical analysis was conducted in order to answer the following research questions:-

5. What is the effect of applying Strategy-Based Module on the level of self-concept of the Jordanian low achievers?
6. Is there a significant difference between the male and female low achievers' self-concept after being trained using the Strategy-Based Module?
7. Is there a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept?
8. Is there a significant difference on self-concept between the experimental group and control group?



The second main research hypothesis is analyzed using two-way ANCOVA, to compare the two adjusted mean scores on SC, (teaching modules and students' gender) and interaction effects of teaching modules and students' gender on one dependent variable (post-test results of SC), while pre-test results of students SC are uses as covariate in this analysis. Figure 4.1 below conceptualizes the statistical analysis of two-way ANCOVA which represent the main effects of two independent variable (two types of teaching modules) and students' gender (Male, Female) on the post-test result of SC when the effects of the pre-test result of the SC are controlled:



Note: - The effects of pre-test result of SC is controlled

**Figure 4.7:** Two-Way ANCOVA with 2 X 2 Factorial Designs

#### 4.10.1 The Descriptive Statistical Analysis for the Test Scores of Self-Concept

Table 4.13 shows that the minimum value for the pre-test scores is 111 whereas the maximum value for the pre-test scores is 205. The results of descriptive analysis also show that the minimum value for the post-test scores is 135 whereas the maximum value

for the post-test scores is 270. It was found that the mean value for the pre-test scores is 162.67 whereas the mean value for the post-test scores is 218.66. The findings of descriptive analysis show that there is increase from the pre-test scores to the post-test scores of the SC.

**Table 4.13 :** Values of the Pre-test and Post-test Scores for SC overall Students Involved in the Study (N=160)

	Min.	Max.	Mean	SD
Pre-test	111.00	205.00	162.67	18.14
Post-test	135.00	270.00	218.66	37.86

Table 4.14 shows that the mean score of the pre-test scores of students who participated in the experimental group is 169.30 whereas in the post-test scores of the same group of students is 253.89. The findings also shows that the mean score of the pre-test scores of students who participated in the control group is 156.04 whereas in the post-test scores of the same group of students is 183.44 Thus, it is suggested that the increase from the pre-test scores to post-test scores of the students who participated in the experimental group is higher than the students who participates in the control group.

**Table 4.14:** Values of the Pre-test and Post-test Scores for SC Students who Followed Experimental and Control groups

Group	Measure	N	Min.	Max.	Mean	SD
Expermntal	Pre-test	80	136.00	205.00	169.30	19.36
	Post-test	80	235.00	270.00	253.89	6.92
Control	Pre-test	80	111.00	177.00	156.04	14.10
	Post-test	80	135.00	221.00	183.44	18.00

#### 4.10.2 Descriptive Analysis based on Students' Gender (M, F)

Table 4.15 shows the results that indicate the mean on the pre-test for the males in the experimental group is 166.73 and become 254.42 in the post-test, the difference between the means is  $(254.42 - 166.73 = 87.69)$ , while the mean on the pre-test to the same gender in the control group is 155.6, and the post-test is 185.58, the difference between the means is  $(185.58 - 155.60 = 29.68)$ . Thus, it suggests that the increase from the pre-test scores to post-test scores of the male students who participates in experimental group is relatively higher than the male students who participates in the control group. On the other hand, the difference in the mean of the pre-test for female students in the experimental group is  $(253.35 - 171.88 = 81.47)$ , while the difference between the same gender in the control group between the pre-test and the post-test is  $(181.30 - 156.48 = 24.82)$ . Also it's noticeable the mean on the post-test for the male students in the experimental group is 254.42 and it was for the same gender in the post-test in the control group is 185.5  $(254.42 - 185.5 = 65.92)$ . The means of the on the post-test for the female students in the experimental group is 253.35 and it is for the same

gender in the control group 181.30 ( $253.35 - 181.30 = 72.05$ ). The means difference among the same gender in both experimental and control groups reveals that small differences, which need further testing.

**Table 4.15:** Mean, Standard Deviation, Minimum and Maximum Values of the Pre-test and Post-test Scores for Students who Followed SC

Group	Gender	Measure	N	Min.	Max.	Mean	SD
Experimental	Male	pre-test	40	136.00	205.00	166.73	18.94
		post-test	40	245.00	270.00	254.42	5.50
	female	pre-test	40	138.00	203.00	171.88	19.67
		post-test	40	235.00	270.00	253.35	8.14
Control	Male	pre-test	40	111.00	177.00	155.60	17.59
		post-test	40	135.00	221.00	185.58	24.82
	female	pre-test	40	137.00	173.00	156.48	9.63
		post-test	40	170.00	200.00	181.30	5.59

#### 4.11 The Assumption of two- way ANCOVA Analysis Procedure

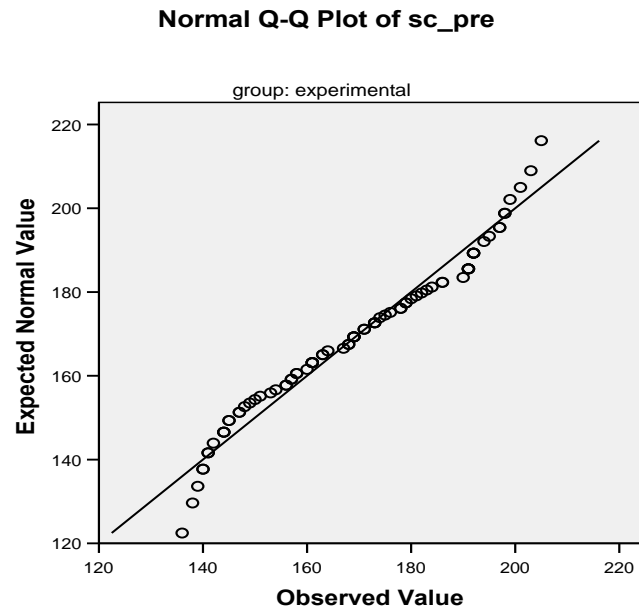
Before two-way ANCOVA is conducted several analyses are done in order to check the assumption associates with normality, linearity, and homogeneity the distribution. In designing the study, it is ensures that the covariate (Pre-test of the SC) measures prior to the test which is the teaching modules Pallant (2007). This is to avoid scores on the covariate from being influenced by the test. Table 4.16 shows the

Skewness and Kurtosis Value of the Pre-test and Post-test for overall Students Involved in the Study.

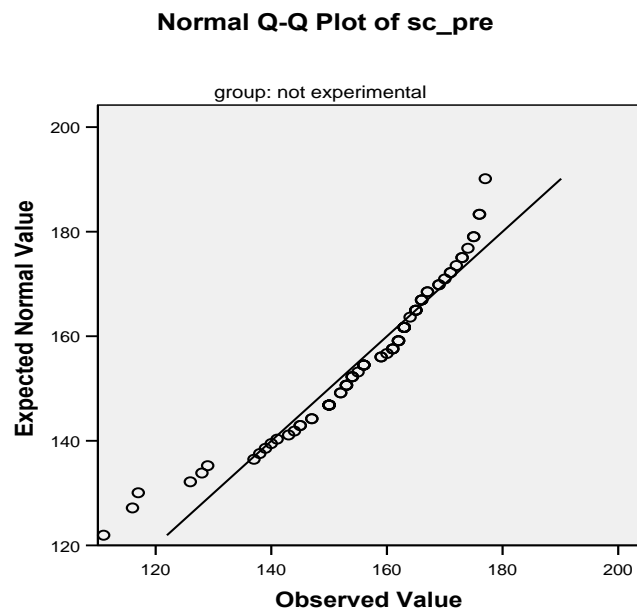
**Table 4.16:** The Skewness and Kurtosis Value of the Pret-est and Post-test Scores for Overall Students Involved in the Study

	Pre-test	Post-test
Skewness	0.07	0.08
Kurtosis	-0.37	-1.27

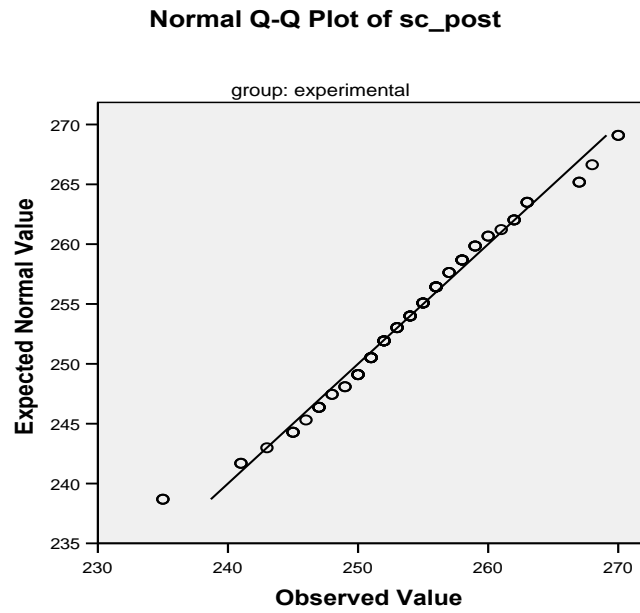
Based on the range of the values which is suggested by George and Mallery (2000), it is found that the skewness and the kurtosis values is considered close to zero which is leads to the conclusion that the distribution of the pre-test and post-test scores of the SC is closing the normal shape. The findings are supported by the result of the Q-Q plot which shows a reasonably straight line (Figures 8,9,10,11) .The results of the Q-Q plot suggests that the pre-test and post-test scores of the student SC are normally distributes.



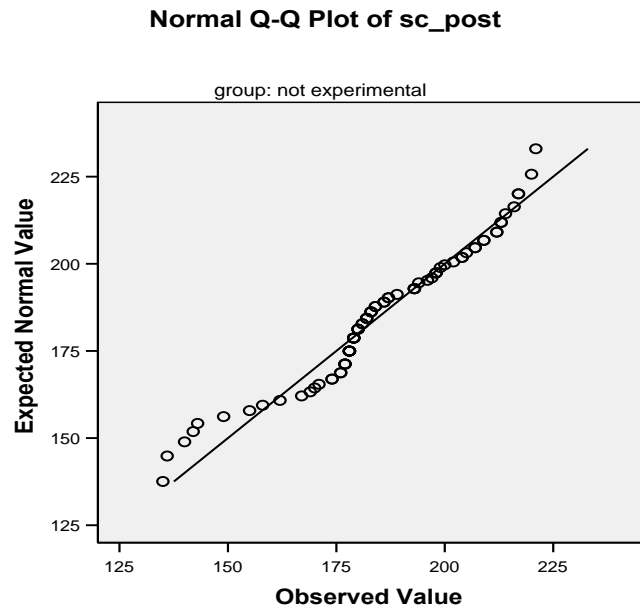
**Figure 4.8:** Q-Q Plot For the Pre-test Scores Of SC



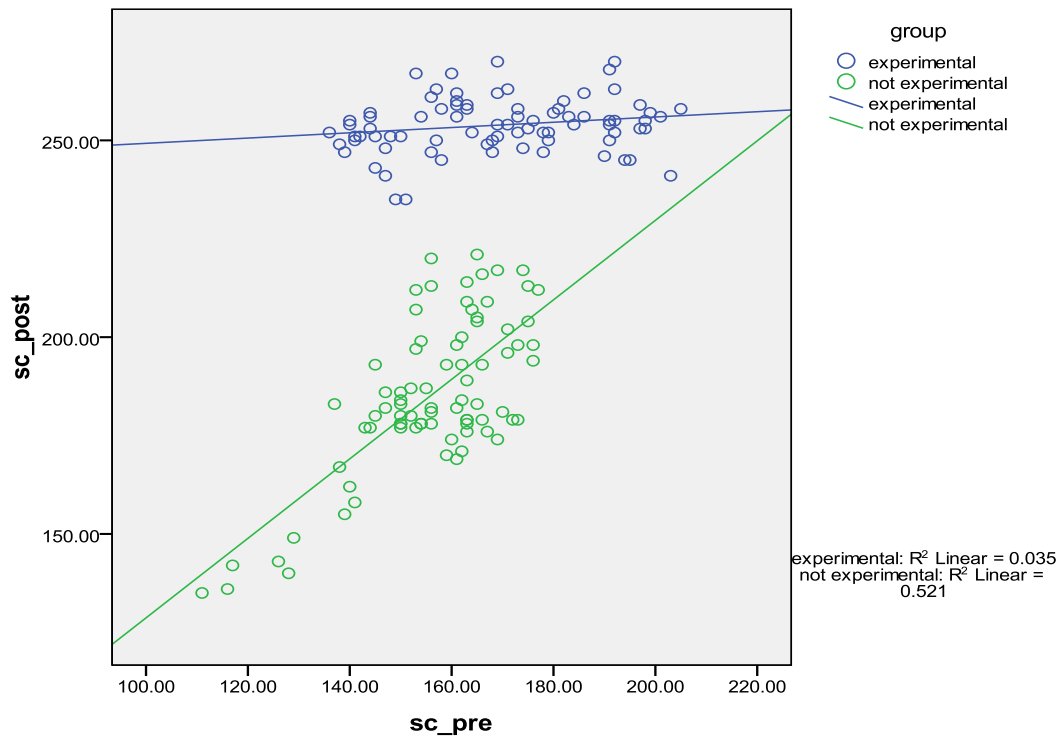
**Figure 4.9:** Q-Q Plot For the Post-test Scores Of SC



**Figure 4.10:** Q-Q Plot For the Pre-test Scores Of SC



**Figure 4.11:** Q-Q Plot For the Pre-test Scores Of SC



**Figure 4.12:** Interaction Effects between the teaching materials and SC

Two-way ANCOVA assumes that the relationship between the dependent variable and each of the covariates is linear (straight-line). One of the reasons for including covariates was to increase the power of the analysis of variance test Pallant (2007). Violations of this assumption are likely to reduce the power (sensitivity) of the test. Scatterplots can be used to test for linearity, but these need to be checked separately for each of the groups experimental and control. The scatter plot appears to be a linear (straight-line) relationship for each group as illustrated in (Figure 4.12) Thus, the findings of this study did not violated the assumption of a linear relationship between dependent variable and covariate.



The final assumption of two-way ANCOVA is related with the homogeneity of regression slopes (Pallant, 2007). This involves checking to see whether there is a statistically significant between the experimental and control group. The result of the test shows a non-significant,  $F(1, 157) = 10.32, p = 0.075$ . Therefore, the findings of this study do not violate the assumption of homogeneity of regression slopes for both groups.

#### **4.12 Research Question Five**

The fifth research question asks whether there is an effect of applying Modified Strategy-Based Module on the level of self-concept of the Jordanian low achievers. This research question was used to structure hypothesis five

##### **4.12.1 Null hypothesis Five**

There is no significant differences in the low achievers self-concept mean score after being trained using the Modified Strategy-Based Module. In order to test hypothesis ( $H_{05}$ ) using two-way ANCOVA, description analysis regarding group was done.. The finding in Table 4.17 shows that SC mean score of the pre-test is 169.30 with SD 19.361 while after being trained using the Modified Strategy-Based Module the mean result for SC becomes 253.89 with SD 6.92.

**Table 4.17:** Values of the Pre-test and Post-test Scores for Students who followed Experimental Group for SC

	Mean	N	Std. Deviation	Std. Error Mean
Pre-test	169.30	80	19.361	2.165
Post-test	253.89	80	6.921	0.774

From the table 4.18 the paired t-test value for means differences is (-39.19) with p-value less than 0.01, this indicates that the post test is significantly higher than the post test, which means that the use of MSBM training has improved the SC level of the students. It can be interpret that the intervention has a main effects on low achievers' SC. Thus, Ho5 is rejected.

**Table 4.18:** The Results of T-test of both Pre-test and Post-test in Experimental Group for the SC

Paired Differences					
Mean	SD	Std. Error	t	df	p-value
-84.588	19.30	2.158	-39.198	79	<0.001

#### 4.13 Research Question Six

The sixth research question asks whether there is a difference between male and female low achievers' self-concept after being trained by using a Modified Strategy-Based Module (MSBM). This research question was used to structure hypothesis six

#### 4.13.1 Null hypothesis Six

There is no significant difference in the self-concept mean score between the male and female low achievers' training using the MSBM. In order to test hypothesis (Ho6) using two-way ANCOVA, description analysis regarding group was done. Table 4.19 presents the overall means and standard deviations of each pre-test and post-test score for low achievers' gender. The mean scores of the males are ( $M = 254.42$ ) and for females are ( $M = 253.35$ ). The results show that the differences between the means not really big. To verify the significant difference between the groups, two - way ANCOVA is conduct.

**Table: 4.19:** The Mean Score and Standard Deviation of the Pre-test and Post-test Scores for SC

Gender	Measure	N	Mean	SD
Male	SC pre-test	40	166.73	18.94
	SC post-test	40	254.42	5.50
female	SC pre-test	40	171.88	19.67
	SC post-test	40	253.35	8.14

The results from Table 4.20 shows that the main effect of low achievers' gender on the post-test score of the students' SC is not statistically significant,  $F(1, 55) = 3.59$   $p = 0.06$  after pre-test score of students' SC are controlled. It can be interpreted that low achievers' gender have not effect to the post-test results of students' SC. Therefore, Ho6 is accepted.

**Table 4.20:** The Results of two- way ANCOVA for the SC

Source	Type III Sum of Squares	Df	Mean Square	F	<i>p</i> -value	Partial Eta Squared
Corrected Model	204258.36	4	51064.59	334.54	0.00	0.90
Intercept	44184.85	1	44184.85	289.47	0.00	0.65
sc_pre	5341.639118	1	5341.64	35.00	0.00	0.18
Gender	547.8034173	1	547.80	3.59	0.06	0.02
Group	149973.2805	1	149973.28	982.52	0.00	0.86
gender * group	29.57375015	1	29.57	0.19	0.66	0.00
Error	23659.41	155	152.64			
Total	7878044.00	160				
Corrected Total	227917.78	159				

Dependent Variable: SC post

a. R Squared = .896 (Adjusted R Squared = .894)

#### 4.14 Research Question Seven

The seventh research question asks if there is a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept. This research question was used to structure hypothesis seven.

#### 4.14 .1 Null hypothesis Seven

There is no significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept. In order to test hypothesis ( $H_{07}$ ) using two-way ANCOVA, description analysis regarding group was done and the results are presented in Table 4.21

**Table 4.21:** The Results of tow- way ANCOVA for the SC

Source	Type III Sum of Squares	Df	Mean Square	F	<i>p</i> -value	Partial Eta Squared
Corrected Model	204258.36	4	51064.59	334.54	0.00	0.90
Intercept	44184.85	1	44184.85	289.47	0.00	0.65
sc_pre	5341.639118	1	5341.64	35.00	0.00	0.18
Gender	547.8034173	1	547.80	3.59	0.06	0.02
Group	149973.2805	1	149973.28	982.52	0.00	0.86
<b>gender * group</b>	29.57375015	1	29.57	<b>0.19</b>	<b>0.66</b>	0.00
Error	23659.41	155	152.64			
Total	7878044.00	160				
Corrected Total	227917.78	159				

Dependent Variable: SC post

a. R Squared = .896 (Adjusted R Squared = .894

The results from Table 4.21 shows that the main effect of low achievers' gender on the post-test of SC,  $F(1, 155) = 0.19, p = 0.66$  as shown in Table 4.21. The interpretation of the non-significant interaction effect indicted that both male and female low achievers' have the same improvement in their SC. Therefore, Ho7 is accepted.

#### **4.15 Research Question Eight**

The Eight research question asks whether there a significant difference on self-concept between the experimental group and control group. This research question was used to structure hypothesis Eight.

##### **4.15.1 Null hypothesis Eight**

There is no statistical significant difference in the self-concept mean score between the experimental group and the control group. In order to test hypothesis ( $H_{08}$ ) using two-way ANCOVA, description analysis regarding group was done and the results are presented in Table 4.22.

**Table 4.22:** The Results of tow- way ANCOVA for the SC

Source	Type III Sum of Squares	Df	Mean Square	F	<i>p</i> -value	Partial Eta Squared
Corrected Model	204258.36	4	51064.59	334.54	0.00	0.90
Intercept	44184.85	1	44184.85	289.47	0.00	0.65
SC pre	5341.639118	1	5341.64	35.00	0.00	0.18
Gender	547.8034173	1	547.80	3.59	0.06	0.02
<b>Group</b>	149973.2805	1	149973.28	<b>982.52</b>	<b>0.00</b>	0.86
gender * group	29.57375015	1	29.57	0.19	0.66	0.00
Error	23659.41	155	152.64			
Total	7878044.00	160				
Corrected Total	227917.78	159				

Dependent Variable :SC post

a. R Squared = .896 (Adjusted R Squared = .894)

The results in Table 4.22 showed that the use of MSBM training in the experimental groups had led to statistically significant improvement in SC scores much better than the control groups,  $F(1, 155) = 982.52, p < 0.001$ , with a large effect size (Partial eta squared = 0.86) (Cohen, 1988). Table 4.22 can be interpreted that the intervention has a main effects on student SC. Thus,  $H_{08}$  is rejected.

#### **4.16 Summary of the findings of the Research Questions**

This section presents the summary of the findings according to low achievers creative thinking and self-concept.

##### **4.16.1 Low Achievers Creative Thinking**

The results of the descriptive analysis showed that there are increases from pretest scores to the post-test scores for both teaching materials. However, the increments from the pretest scores to post-test scores for the students who followed the Modified Strategy-Based Module (MSBM) are relatively higher than the students who followed the Currently Used Strategy Module (CUSBM). The same pattern also appeared when the descriptive analysis is done based on low achievers' gender (Male and Female) for the two types of teaching modules the MSBM and the CUSBM.

The results of inferential statistics showed that when the effect of the pre-test results of low achievers creative thinking is controlled:

1. There is a significant main effect of modified strategy-based module on the posttest results of low achievers creative thinking.
2. There is no significant main effect of low acheivers' gender on the post-test results of creative thinking.
3. There is no significant interaction effect between types of teaching modules and low achievers ' gender on the posttest scores of creative thinking.



4. There is no significant difference in the creative thinking mean score between the experimental group and the control group.

#### **4.16.2 Low Achievers Self-Concept**

The results of the descriptive analysis showed that there are increases from pretest scores to the posttest scores for both teaching materials. However, the increments from the pre-test scores to post-test scores for the students who followed the MUSBM are relatively higher than those who followed the CUSBM. The same pattern also appeared when the descriptive analysis is done based on low achievers' gender (Male and Female) for the two types of teaching modules (modified strategy-based module and the currently used strategy-based module).

The results of inferential statistics showed that when the effect of the pretest results of low achievers self-concept is controlled:

1. There is a significant main effect of modified strategy-based module on the post-test results of low achievers self-concept.
2. There is no significant main effect of low achievers' gender on the post-test of self-concept.
3. There is no significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept.
4. There is no significant difference in the self-concept mean score between the experimental group and the control group.

#### **4.17 Results of the Experimental and Control Groups Observations**

This section presents the results of the observations. This part gives answer to the first, fourth and fifth research questions: (1) to examine the effect of applying Modified Strategy-Based Module on the creative thinking of the Jordanian low achievers. (2) to examine the effect of applying a Modified Strategy-Based Module on the self-concept of Jordanian low achievers. (3) to see if there is a significant difference between the experimental group and the control group in the self- concept and creative thinking of the Jordanian low achievers.

Four groups were chosen: two control groups which were taught by the currently used strategy based module (Table 3.5, in section 3.6.5.1) and two experimental groups which were taught by a modified strategy-based module (see Table 3.6 in section 3.6.5.2). These two issues were judged on the basis of a classroom observation and post-reading tests. It aims to investigate the low achieves' self-concept and creative thinking.

The results of the group observations show that the teachers in the experimental groups used all the activities in the modified strategy-based module and according to the steps that shown in the module. The students in the experimental groups were active participants due to the different skills and activities in the MSBM. The activities helped the teachers to train low achievers. These activities were supported by pictures that illustrated them and had positive effects on the low achievers training and then lead to their better understanding and performance. It also helped them to understand, remember and learn actively. During the observations, it was observed that the participants were interested and showed great enjoyment during the hours of learning. The procedures in

the MSBM were interesting and effective. It helped the participants to work in groups. Group work activities encouraged students to interact and work with each other. The low achievers were excited and actively participated in learning. The teacher was a facilitator, keeping order within the groups and encouraging them to participate successfully in the learning process. Cooperation was seen between the students and they were active. The teachers also encouraged students to make their own explanations that helped them to involve in the learning situation. Discussions of activities conducted between the teachers and students and the students with each other. The students could not find difficulty to check the activities or solve a problem with their partners. The activities helped the low achievers to involve actively and to gain confidence by manipulating their various ways. At the end of the observations the researcher checked the observation report with the experts. Approximately, the results were same.

In the control groups, the teacher used the currently used module. The teacher in the control group (TC) tried to use the activities in the module. The activities in the currently used strategy module were not structured; therefore, the lessons were not effective to improve the low achievers' self-concept and creative thinking of those in the control groups.

#### **4.18 Summary of the Research Results**

The results showed a statistical significant difference ( $<0.001$  in the post test of the four groups. Those taught with (MBSM) have higher post-test scores than those in the control groups. The results also included the effectiveness of the (MBSM). The results also indicated the effectiveness of the teaching techniques of the modified based strategy module (MSBM). The results also showed that there is no significant difference in gender.

#### **4.19 Conclusion**

This chapter presented a comprehensive analysis of the data collected by the research tools to summarize; the results of the tests and the observation have provided information regarding the low achievers' academic performance.

## **CHAPTER 5**

### **DISCUSSIONS & CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

The aim of this study is to assess the effectiveness of a Modified Strategy-Based Module in improving the creative thinking and self-concept of Jordanian low achievers in the sixth level primary schools who were learning in Resource Rooms. The study examined the possible improvement of creative thinking (CT) and self-concept (SC) of low achievers at resource rooms at the primary level in Jordan by applying a modified strategy-based module (MSBM), taking into consideration students' gender as secondary independent variables. The sample consisted of 160 Jordanian low achievers at Al-mafareq governorate at Jordan, who studied in the sixth grade primary school.

Data was collected during the first semester of the academic year 2011-2012. The subjects were randomly selected from different boys' and girls' schools at Al-mafareq governorate in Jordan. In the first phase, the participants were given the Torrance Test Creative Thinking and Pears & Harris 2 Self-Concept Scale as pre-tests to examine the level of their creative thinking and self-concept. In the second phase, the subjects were divided into four groups (2 experimental and 2 controls). Each group was consisted of 50 students.

Two independent variables are employed in this study: a modified strategy-based module (MSBM) and the currently used strategy based module (CUSBM). The subjects of the experimental groups were taught by the modified strategy-based module (MSBM), while the control groups were taught by the currently used strategy based module (CUSBM). All groups were taught for six weeks. After the instructional treatment, the subjects were given the same tests that are Torrance Test Creative Thinking and Pears & Harris 2 Self-Concept as post-test. The post-tests were corrected by the researcher and two resource room teachers. After that, interviews were conducted with 10 resource room teachers to get suggestions about the effect of the (MSBM) and the effectiveness of the activities and methods that cited in the module in improving low achievers' creative thinking and self-concept.

This chapter discusses the results of the study in the light of the eight research questions; suggest some recommendations based on the findings of the study as well as contributions and conclusions. The following section presents the discussions which are focused on two aspects of the study: creative thinking and self-concept and the two teaching programs: (MSBM) and (CUSBM).

## **5.2 Discussions**

Based on findings of the study, the researcher has made the following discussions regarding the effectiveness of a Modified Strategy-Based Module (MSBM) in improving the creative thinking and self-concept of Jordanian low achievers according to the nine research questions.

1. What is the effect of applying Modified Strategy-Based Module on the level of creative thinking of the Jordanian low achievers?
2. Is there a significant difference between the male and female low achievers' creative thinking after being trained using the Modified Strategy-Based Module?
3. Is there a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of creative thinking?
4. Is there a significant difference on creative thinking between the experimental group and control group?
5. What is the effect of applying Modified Strategy-Based Module on the level of self- concept of the Jordanian low achievers?
6. Is there a significant difference between the male and female low achievers' self-concept after being trained using the Modified Strategy-Based Module?
7. Is there a significant interaction effect between types of teaching modules and low achievers' gender on the post-test scores of self-concept?
8. Is there a significant difference on self-concept between the experimental group and control group?

### 5.2.1 Research Question One

The findings revealed from research **Question One** showed the effectiveness of the (MSBM) with the experimental groups in improving their creative thinking. It showed that the modified strategic-based module which included activities and procedures that had been derived from the Jordanian low achievers' environment (such as the use of various exercises, and diversification in the methods of teaching, kinds of questions used in the classroom such as, wh, questions and yes/no questions) is a suitable module in developing and improving Jordanian low achievers' creative thinking skills. The activities in the module provided suitable ways for creative based strategies that had assisted on the establishment of a relationship based on respect, love and trust capabilities of low achievers. It was evident from the findings that activities in the MSBM helped the low achievers of this study not only to ask questions and answer but also to provide them ability to express freely and raise their level of creativity. In addition, it provided the subjects (the experimental groups) with an atmosphere of fun in doing the activities and playing the games. This was particularly evident, when he/she is asked to respond. The low achievers showed significant interaction with each other through the type of questions used in the MSBM. This showed their abilities in understanding and answering questions. Such findings have reflected the impact of the module on the development of the creative thinking skills of the experimental groups. Jeleel ( 2002) supported the view that providing children with creative experiences will help them be mature and gain success in their real life. Ellis, (cited in Scruggs and Mastropieri, 1993) also suggested some thinking strategies in the curricula of low-achiever-students, such as orientation process, framing process, applying process and generalization. Therefore, this study is in congruent with Ellis and jeleel's findings.



The poor performance of the control groups is due to the ineffectiveness of the activities in the CUSBM. This finding is supported by (Marlo, 2009) who said, that low achievers need activities and ways such as discussions to develop their creative thinking and self-concept. However, this result also corroborate previous studies conducted byowitz & Jenkins, Lefrance (1995); Jarawan, (2002) on the effectiveness and development of creative thinking. These researchers also emphasized the role of thinking skills which has become an urgent necessity for training low achievers.

The practical and good performance of the experimental groups lies in the use of the activities in the MSBM. The explicit and effective activities in the MSBM have encouraged the experimental groups to promote and establish new practices that raised their academic performance. In fact, these findings are consistent with results of previous studies (Woolfolk 1998; Angelo & Cross, 1993; Starko, 2005) who said that low achievers need effective training on important creative thinking skills and abilities in solving problems.

Though the currently used strategy module (CUSBM) includes activities such as giving descriptions, predicting and procedures (group work, pair work), yet teachers are not using them in teaching the low achievers in the Jordanian resource rooms. This result is relevant with Albadareen (2006) who provided evidence that Jordanian low achievers trained in a fairly traditional way which mostly concentrates on individual feedback and the teachers play the main role in the academic learning process. In other words, the process of teaching is a teacher-student interaction. These findings also supported by one

of the teacher interviewees (F T 2) who stated, that procedures for teaching the activities in the currently used strategy based module are not enough to improve the low achievers' performance. The teachers mentioned that the Modified Strategy-Based Module hopefully should be useful since it supported with more mixed, effective activities, tasks and procedures that may help the low achievers to involve in the learning process.

### **5.2.2 Research Question Two**

According to the findings of research **Question Two** one can say that students' gender does not have any main effect on students' creative thinking. Such findings are congruent with Shibeeb's (2000) study that low achievers' learning is not affected by their gender. This finding is also consistent with a study carried out by Albadareen (2006) who illustrated that there was no effect of gender variable on self-concept dimension.

The results also indicated that there was no interaction effect between students' gender and the teaching modules on the post-test scores of low achievers' creative thinking. This finding, actually, means that the effects of the MSBM on experimental group did not vary by gender. Consequently, such finding indicates that both male and female students are influenced by the teaching modules at the same level. Therefore, it shows a positive effect in favor of the MSBM as implies some approach for male or female. This result is consistent with Shibeeb (2000).

### 5.2.3 Research Question Three

Findings of research **Question Three** revealed that subjects in the experimental groups performed better than those in the control groups. In other words the results showed that low achievers who trained by the modified strategy-based module obtained better results on TTCT than those who trained by the currently used module. This shows that the combination of the two programs (CoRT and SCAMPER Program) and the systematic organization of the activities and the implication procedures in the modified strategy-based module helped the experimental groups to improve their creative thinking.

The reason would be that the CoRT program skills that are used in the Modified Strategy- Based Module increased the students' sensitivity towards the problem, as they learn to look at things from all sides, considering all factors and determining the problem and the results that expected from any behavior or action. This sensitivity toward any subject is one of the characteristics of creative thinking, so, if students are trained with these skills creative thinking would be developed. Research on the effect of CoRt program on the performance of low achievers approved that activities in CoRt program increases the student's ability to reflect the things around them, and employ them in new creative ways (Jarawan,(2002).

Clearly, the combination of the skills from SCAMPER and CoRt in the Modified Strategy-Based Module has an impact on the development of creative thinking and self- concept of the students. Therefore, the design of the lessons in the module was graded according to the students' abilities that provided an opportunity to help students

to interact between themselves and with their teacher. It also took into consideration the individual abilities of the students with learning disabilities in solving the exercises, doing practices through individual or group work practices. It also provided a fertile opportunity for dialogue and discussion among students by working in groups.

It should be noted that the Modified Strategy-Based Module has also included a home work exercise that offered the participants to do at home. This gave the participants of this study enough time to think and meditate. The students were also asked to put conclusions to the stories or give final answers. Such practices helped the students to put several ideas and thoughts which enhanced their fluency, and creative thinking. It was noticed that such practices offered the students opportunities to derive and expect the skill that they are going to learn. Finally, students are offered more exercise and practices such as to answer open-ended questions or do the process of brainstorming. It is so clear that such practices helped the students to put up a large number of ideas to enrich their fluency and also increase their ability to exchange ideas, discuss and listen to each other and later use them in different situations. The program also included exercises that aim to increase the participants' abilities in employing the skill to interact with each other, share ideas, discuss and listen to opinions of others and to expand awareness of each group to other groups.

The educational measures that have contributed to these positive results ensures the students' understanding of each training, and have given the opportunity for the students to search for the largest number of responses without fear of falling into error, and then asking them to think of other types of alternatives, and encouraged the search

for new answers, and finally trained them to choose the best. Here we found the impact of the lessons in the module on the development of creative thinking of the participants of this study. This result is in line with Blankenship (1975) and Jacob E. K. (2011).

#### **5.2.4 Research Question Four**

In favor of findings of research **Question Four** showed a significant difference on between the experimental and control groups' creative thinking. This means that MSBM module, applied in this study has contributed significantly and directly in improving the creative thinking of the subjects of the experimental groups compared with their counterparts in the control groups who continue their usual program in their regular classes and room of resources. This means that the experimental groups showed significantly better scores after being taught using the MSBM compared to the control groups. The findings were almost similar to the description in the study by Ali (2010) where the effect on training by CoRt program developed the flow of creative thoughts of superior students in Jordan. These findings were also congruent with previous studies done by (Al-Sulaiman, 2009; Marlo 2009; Moosa,2007; Al-Umari, 2006; Leshowiz & Jenkins, 1993; Olenchak, 1995,Sit-Abuha; 2001) who investigated the effectiveness of using training programs (SCAMPER and CoRt) in measured creative thinking. Al-Sulaiman's study (2009) reported that the culture have effects on the capabilities of creative thinking. The results confirm that there is a strong effect on such capabilities of creative thinking. This illustrates the importance of culture on learning performance. Therefore, this finding supports the results of this study. Therefore, the results of the present study agree with the study of Marlo (2009) that focuses on the inside form of creative thinking of postgraduate students in the online/internet learning community.

### 5.2.5 Research Question Five

The results revealed from research **Question Five**, showed that low achievers who used the modified strategy-based module obtained better results on Piers-Harris 2 Scale after the application of the modified strategy-based module. Therefore, this study showed statistically significant differences of low achievers' post-test in improving their self-concept. The implication of the modified strategy-based module was successful for improving self-concept to participants. One can say that the effectiveness of the module is due to the method used in applying it. The ways that had been used contributed in building an atmosphere of intimacy that creates a strong relationship among the students, as well as understanding their feelings, and learning that helped them in the development of their self-concept. One of the factors that had contributed to the improvement of self-concept was the use of variety of procedures in this module which led to a development of a good relationship between the teacher and the sample of low achievers who participated in this study. Another reason are the activities used included in this module (MSBM). These activities created a positive interaction from the low achievers in doing such activities which may have contributed in increasing their self-confidence and sense of competence. These results are supported by a study carried on by Al-badareen (2006) who developed a program that provided activities in improving creative thinking and self-concept of Jordanian low achievers

### 5.2.6 Research Question Six

The finding derived from research **Question Six** showed that low achievers' gender does not have any main effect on students' self-concept. These findings may be based on the following issues:

- Social, economic, and cultural conditions were similar for students and parents.
- Place and time conditions were also similar for male and female students with both having equal opportunity to learn within the same time period.
- Somewhat equal technical and academic levels and teaching experience of male and female teachers who involved in the present study.
- Jordanian parents no longer differentiate between male and female students regarding equal opportunity to learn due to conscious promotion programs emphasizing on the need to provide girls while education up to the highest levels. The trend is obvious as reflected by the male and female ratio among the university student body, as well as workforce employed in various sectors in Jordan. This findings is not in agreement with Shahuria, etal, ( 2011) study that showed significantly higher SC of girls than boys. The researchers reported that girls perform higher than boys in parental profession and academic achievement during early adolescent stage.

### 5.2.7 Research Question Seven

Consequently, results of research **Question Seven** on self-concept indicated that there are no interaction effects between types of teaching modules and low achievers' gender on the post-test scores of low achievers self-concept. This means that the effects of the MSBM on experimental method did not vary by gender. Such result indicates that both male and female students are influenced by the teaching modules at the same level. This also shows a positive effect in favor of the MSBM as suggested by this study, because it helped in developing self-concept of both male and female students. This actually means that the effects of the MSBM on the experimental groups did not vary by gender. This result is consistent with Al- Badreen (2006) and Shibebe's, (2000) who said there was no effect of gender variable on self-concept dimension.

### 5.2.8 Research Question Eight

The findings of research **Question Eight** revealed the difference in the self-concept mean score between the experimental groups and the control groups. this showed that students who used the modified strategy-based module attained higher posttest scores than students who used currently used strategy-based module In other words, the results showed that the students in the experimental groups who used a modified strategy-based module obtained results on PHSS better than those low achievers in the control groups who used the currently used strategy-based module Therefore, the results showed statistically significant differences in low achievers with the experimental group that was improving self-concept compared with the control group. This implicates whether that the modified strategy-based module was successful improving participants' self-concept. Accordingly, the results showed that the self –



concept of the experimental group was significantly improved compared with those in the controls. Therefore, this result shows that the Modified Strategy-Based Module contributed in improving the self-concept and creative thinking of the participants in the experimental groups. The growth of imagination, alternatives and the ability to bring things with another, were some of these strategies that worked to improve the self-concept of students. The findings of this study also are in agreement with the study attempted by Bright, (2002) that investigated the effect of a program of teaching the strategies of solving social problems. In other words, the results show that the use of thought-strategy increases the ability of the participants in solving real problems, and in improving their self-concept.

Additionally to what is mentioned in the previous paragraphs a distribution of roles between the teacher and students and between students themselves in the class, increased the students' confidence and abilities. Besides, the cooperative spirit of the work between groups, created a kind of intimacy and social relations, between them and the nature of the creative activities included in the module. All these strategies allowed the students to have a role in leading the dialogue which may later gave them opportunities to choose and freely express what is going on in their mind without the use of direct assessment. The practices in the module focused on questions with multi-horizon answers that made students to think in a large number of alternatives. Such types of practices were taken from the environment surrounding which is in relation with the participants' culture. This kind of practices helped the participants of the experimental groups in this study to get a good understanding about themselves. The study's findings agreed in part with findings revealed by (Al-khateep, 1995; Al-Srou

and Hussein, 1997; Shabeeb's, 2000; Al-badareen, 2006) who appreciated the effectiveness of new programs, methods and creative activities in teaching low achievers.

To sum up, the findings indicated, using a modified strategy-based module with the experimental groups has improved the low achievers' level of creative thinking and self-concept. The non-significant difference between the experimental and control groups in the pre-test and the significant difference between the experimental and control groups in the post-test imply that the modified strategy based module proved to be active in helping low achievers to improve their creative thinking and self-concept. The results of the experimental groups proved that if Jordanian low achievers could get the necessary training effectively, they would perform well and improve their academic performance. Therefore, high performance of the experimental groups proved that low achievers need to be trained appropriately to develop their creative thinking and self-concept.

In conclusion, the empirical data of this study provide evidence to support previous studies (Al-khateep, 1995; Al-Srouer and Hussein, 1997; Shabeeb's, 2000; Albadareen, 2006) that asserted the interaction of the two programs that is CoRt and SCAMPER Program developed the creative thinking and self-concept of low achievers.

### 5.3 Recommendations

The use of a modified strategy-based module for teaching Jordanian low achievers may hopefully improve their CT and SC. The significance of this study is the use of a strategy- based module that combines games from SCAMPER and CoRT in one module to develop young low achievers' CT and SC. The findings showed the effectiveness of the (MSBM). Consequently, it may be a useful tool to educationist to use appropriate strategies to teach low achievers. On the bases of the findings and conclusions the following recommendations are justified

1. The results suggest investigating other dependent variables such as scientific reasoning, problem solving skills; students' achievement, attitudes, and interest toward science.
2. Using a modified strategy-based module by Resource Room Teachers needs an enough training which be extended to six weeks, so that clearer results can be recorded.
3. Implications of systematic studies on the other levels of low achievers in Jordan is needed..
4. A focus on students' gender as real moderating variable to get more clear underrating is recommended.
5. Empirical tests are needed to determine moderating variable (s), such as, students' levels of learning process, motivational level, locus of control, anxiety among students, students' ability, IQ and ability level.
6. A comparison study on male and female low achievers to find out to what extend that gender affects the level of creative thinking and self-concept is recommended.

## **5.4 Implications of the Study**

The results of this study have indicated several practical applications for teaching low achievers. Therefore, the findings have raised a number of issues that would be worthy of further research. First, it is hoped that the Modified Strategy-Based Module (MSBM) can become a reference and a tool to promote activities that raise the level of creative thinking and self- concept of low achievers in Jordan. Likewise, using two programs helped in teaching thinking to low-achieving students, is inclined to agree with Leaby (1993) who stressed “different activities support low achievers” . Second, moreover, there was no difference between the two programs regarding teaching thinking skills; therefore, the combination of activities of two programs in one module can develop the low achievers’ academic performance and self- confidence. Third, resource room teachers in Jordan have now a module that may lead to a proper training for the sixth level low achievers to improve their creative thinking and self-concept. Finally, MSBM can be a tool that may be used with different age levels of low achievers. Deo and Mohan, (1972), Sawason, et.al (1998) have supported the use of CoRT and Scamper Programs in developing CT and SCs.

## **5.5 Conclusion**

This study has attained the objectives set out previously, (a) developing a Modified Strategy-Based Module (MSBM) in teaching low achievers and measuring its effectiveness from observing the groups during the teaching sessions (b) found significant differences between the creative thinking and self-concept of the experimental groups and the control groups (c) found the significant interaction effect between types of teaching modules and low achievers’ gender on the post-test scores of

creative thinking and self-concept (d) found significant difference between the male and female low achievers' self-concept and creative thinking after being trained using the Modified Strategy-Based Module and (e) got suggestions for improving MSBM from interviews with teachers.

The Modified Strategy-Based Module (MSBM) consisted of two programs (CoRt and SKAMbER). The two programs combined in one module i.e MSBM. It consisted of different activities and procedures to develop the level of creative thinking and self- concept of the sixth year low achievers in Jordan. Based on the findings of this study, the Modified Strategy-Based Module (MSBM) has proven to be an effective module for improving the level of creative thinking and self-concept of Jordanian low achievers. The result also showed that there is no effect of students' gender on the post-test scores of the student' CT and SC as well as the pre-test scores. Therefore, it can be interpreted that types of students' gender do not have any effect on the post-test results of students' creative thinking and self-concept. Hence with the support of suggestions from interviews, MSBM is useful in teaching low achievers in the Jordanian resource rooms.

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## **Appendix A**

### **Modified Strategy-Based Module**

#### **Introduction**

This module is concerned with a modified strategy-based module that intends to develop low achievers self-concept and creative thinking. It includes 20 lessons and 10 games. It includes the steps for introducing the lessons and games to help the learners to involve in the lesson. Each game includes 3 drills. This modified strategy-based module is a tool to develop low achievers self-concept and creative thinking. The teacher will read and explain the story. Students should be divided into groups and then use discussions. It designed for grade six low achievers. It includes the following The Modified Strategy Based Module is based on the idea of teaching thinking to six-year low achiever students. The process depends on teaching such students two active programs of teaching thinking: The module combined two programs. It is CoRT 1 - CoRT 4 and SCAMPER. The SCAMPER Program is one of the programs that aim at teaching thinking as an independent subject. In this regard, the present researcher refers to some important points of the two programs that combined in one Modified Strategy- Based Module. This module applies the two programs of CoRT and SCAMPER in a suitable new way that applies activities closely that related to the daily life of students. Adopting the first part of CoRT as a basic part for the other parts; as referred to by Edward Depono. As regards the selection of the fourth part of CoRT, that is because it is the part which is devoted to the development of the skills of creative thinking. It includes some activities of SCAMPER program that suit the goals of every lesson in the modified based-strategy module. These activities achieved two goals: the first goal is the skill of creative thinking; and the second goal is forming student self-concept. The teacher is charged to follow the students' feedback of their homework.

### **Characteristics of the Module**

The characteristic of this module is based on developing the mental abilities of low achievers in a proper way so as to help them improve their knowledgeable level and overcome the problem of low achievement. Combining two programs of teaching thinking and moulding some activities that go with the characteristics of the target group; and then presenting such activities in an applicable frame closely related with every lesson there are specific goals which are in harmony with the student's daily life with the goals of the other lessons. The goals of all these lessons are intended to realize the total goals of the module. This module secures interaction between the students and their teachers and between students themselves. It also provides students with opportunities to work individually through various activities and instructions of application and the sequence of the given activities that guarantee the achievement of all goals.

### **Goals of the Module**

- Developing the skill of creation of low achievers through the improvement of their knowledge level and the learning of various strategies of thinking their concept of ego through the group-work training included in this program and leading a group of mates.
- It give students a chance of expressing their opinions and discuss them aiming at evaluating such opinions and arriving at choosing the best of them to solve their problems.
- Training low achiever students how to use the means of thinking found in (the first and fourth) of CoRT Program and Scamper Program

### **Components of the Module**

This module consists of twenty lessons that will be taught in 5 days per week. The time of each lesson is 90 minutes. The basic components of the module are as follows:

a) CoRT 1    ( b) CoRT 4    (c) SCAMPER“S(

### **Teaching Procedure**

Summer work cards which are of two types: one is related to the teacher and the other card is devoted to the student.. They are as follow: ( a) Teacher card (b) student card (c) Homework papers.

### **Activities**

:Every lesson contains the following activities:

- (a) Definitions: are given to clarify the skill of thinking to introduced in the lesson
- (b) What the student is to learn: Here the specific goals of the lesson are limited and realized/achieved by the student
- (c) Entrance attitude: This is a story/tale or an action that helps the student to .conclude the skill of thinking
- (d ) Solved example: This is related to training students the application of the skill of thinking.
- (e) Class drills/training: Here students work together to apply the skill of thinking through gradual practical application.
- (f) Homework: This means individual training usually done at home by students and the job of their teacher is evaluate/assess it and give feedback

### **Mechanism of the Module Application**

This module is applied in rooms of low achievers learning sources where the number .of students should not be more than 15.

The teacher should adhere the instructions of every activity. In the beginning of class drills/training, the teacher distributes students in groups the number of each group is not more than 5 students.

### **1. Modified Model Goals**

- 1- Developing creative thinking for low achievers by developing their cognitive abilities and providing them with various thinking strategies.
- 2- Improving self concept of low achievers through special training within the team work and group leadership program. This will give students a chance for expressing and discussing their ideas and develop their abilities of evaluating and choosing the best problem solution.
- 3- Training low achievers to use the tools of thinking included in the first and fourth CORT and in scamper.

### **2. Time**

The module will be conducted in 4 weeks, from Sunday to Thursday. Each lesson should be taught in two periods. Each period 45 minutes, that is 90 minutes. The total number for the whole program will be 30 hours.

### **3. Teaching Procedure**

The teaching procedure depends also on a set of drills carried out in form of games that assist the target's mental activity of the participants in class room shows through Work Card.

#### **(a) Teacher card**

Skill definition: This helps the teacher to understand what 'skill' to be taught and what components it has.

- 1- What students learn of 'skill', i.e., the goals which should be realized by students?
- 2- An attitude or a short story suggested by the researcher. This should be delivered by the teacher and the students are required to conclude the importance of 'skill' and its applications.
- 3- An example suggested by the researcher to help the teacher clarify how a skill is applied by students.

#### **(b) Student card**

These include three drills of skills for students which are gradually introduced in the following way:

1. The first drill: This is a general drill to be done by all groups of students with the help of the teacher.
2. The second drill: This is a general drill too, but it is done by the groups of students without the help of the teacher.
3. The third drill: This is an individual drill to be done by every student individually.

#### **4. Homework sheets**

These are individual drills to be done by every student at home. The teacher should assess every home work and provides them with feedback.

Note:

In case of preparing the lessons 1-20, this will be included in the module components.



## Content

<b>Section One (10) lessons</b>	<b>CORT 1 (Breadth):</b>	<b>Lessons</b>
	1	Lesson One: PMI Deliberate
	2	Lesson Two: C A F Looking as widely
	3	Lesson Three: RULES
	4	Lesson Four: C&S Consideration of the immediate
	5	Lesson Five: AGO Picking out and defining objectives
	6	Lesson Six: PLANNING the basic features and processes
	7	Lesson Seven: FIP. Choosing from a number
	8	Lesson Eighth: APC Generating new alternatives and choices
	9	Lesson Nine: DECISIONS
	10	Lesson Ten: OPV
<b>Section Two (10) lessons</b>	<b>CORT 4 (Creativity)</b>	
	1	Lesson One (YES – NO – CREATIVE
	2	Lesson Two: (STEPPING STONE)
	3	Lesson Three: (RANDOM INPUT)
	4	Lesson Four: (CONCEPT CHALLENGE)
	5	Lesson Five: DOMINANT IDEA
	6	Lesson Six DEFINING THE PROBLEM.
	7	Lesson Seven: REMOVAL OF FAULTS
	8	Lesson Eight: COMBINATION
	9	Lesson Nine: REQUIREMENTS
	10	Lesson Ten: EVALUATION
<b>Section Three</b>		<b>Scamper program: It include drills</b>

## **Lesson One: The Treatment of Ideas**

### **1. Introduction**

The treatment of ideas: This is used to evaluate the most suitable idea or solution. It is also used to judge extending the idea or the solution. This includes three elements:

- a- Positive features: These are the good features found in the solution or the idea.
- b- Negative features: These are the bad features found in the solution or the idea.
- c- Interesting: this is the new idea which emerges after studying the good and bad things or features.

### **2. Objectives**

**What does the student learn from/in this lesson?**

- a- Not to neglect any idea.
- b- Evaluating ideas from both sides: positive, negative.
- c- Creating new ideas.
- d- Deep thinking before evaluating any idea.

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **The introductory Story**

The headmaster gathered all his teachers to discuss the topic of the 'Morning Queue'.

The decision was to cancel it because of the following negative things:

- Many problems emerge among students during this activity.
- Students feel tired of standing for a long time.
- Study courses need additional time to be completed. So, canceling the 'Morning queue' will save time for this purpose.

However, the cancellation of the morning queue resulted in many problems, mainly:

- No interaction took place among the students of different sections.
- Increased Boredom and weariness.

- Reduced students' talents and capabilities.

What is the fault of the headmaster and his teacher when they decided to cancel the morning queue?

**A Solved Example: The Idea: no School Bags for Students:**

Positive	Negative	New ideas
1. Students will get rid of carrying heavy bags	1. The parents' supervision of their kids' homework's will be reduced because their children leave their books at their schools	1. Every student should have books both at home and in school
2. Parents will save the money of bags	2. Schools will not send remarks about students to parents through these school bags	2. The students' bags should be sent home in weekends.
3. There will be no need of lockers for these bags at home	3. Mothers will not be able to send food in bags for their kids.	3. A day in the week should be devoted for each book to be sent in the student's bag
4. No bags at home means no homework		

**(b) Student card**

The class is divided into 3 or 4 groups

**The first drill:** All groups try to find the positive, negative and new ideas in the following idea with the help of the teacher:

**The Idea:** Every student should carry a special sack in order to get rid of his garbage.



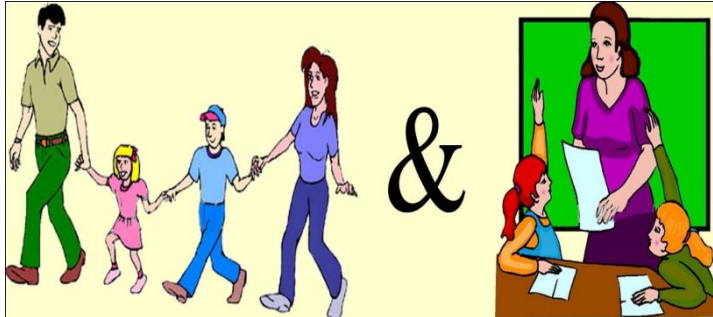
**The second drill:** All groups discuss the following idea in regards of its positive, negatives and new features without the help of the teacher.

**The Idea:** the week – end becoming three days instead of two.

JANUARY 2011						
SUN	MON	TUES	WED	THURS	FRI	SAT
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

**The third drill:** Every student individually discusses the following idea in regards of its positive, negative and new features and then discusses it with other students.

**The Idea:** Parents should come with their children to school



#### **4. Homework**

A lot of people wish that there is enough time to finish some work or free time to enjoy themselves.

**Close your eyes breathe deeply and then imagine that there is an eighth day in the week; I wonder:**

- What is the name to be given to this day?
- When does this day come? (After which day?).
- What will you do in this new day?
- What are the good things in the idea of having an eighth day?
- What are the bad things in the idea of having an eighth day?
- What are the new things in the idea of having an eighth day?

## **Lesson Two: Think in all Things**

### **1. Introduction**

Think in all things: When you try to take a decision or even to think of any things, there should be some factors to be considered. In case you leave or ignore some of those factors, your decision, which may appear faultless at the time, will be proved wrong later. Taking all factors into consideration guarantees the rightness of your decisions and as a result you will never feel peritent for taking them. Moreover, this will help you consider the ways pupil follow to think of things and the factors they consider or ignore.

### **2. Objectives**

#### **What does the student learn from this lesson?**

From this lesson the student will learn:

- (a) not to forget any facts/ideas related to some of this.
- (b) to think of all things related to an idea.
- (c) to approach the right answer(s) of this idea.
- (d) that in case he leaves some this important, he will be thought mistaken later.

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory story**

One woman decided to re-paint her house before Adha-Eid she paid visits to many painting-shops in order to be acquainted with the modes painting-colors and the ways of painting. She, also, consulted her husband and children regarding her choice of paint. They all put a plan for setting their house-rooms in order. As so , they started with the guest-room, the living-room, the kitchen, and finally their bed rooms. What was grievous was that that woman/ wife forgot that the Eid day happened to be in the second week of winter. That means that the Eid day came while their house was still wet. That was because their house was not supplied with an air-conditioner.

- a) What was the mistake of the wife when she chose/decided the time of painting?
- b) If you were in the position of that woman, what would you do in order to solve the problem of the dryness of the paint?

### **Solved examples**

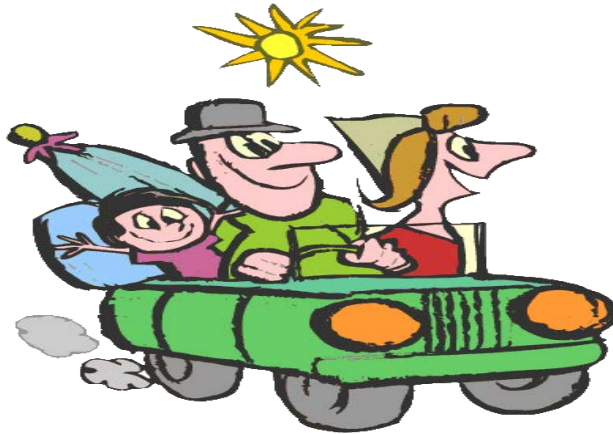
What are the factors to be considered when planning to spend a holiday?

- a) Period of vacation/ holiday.
- b) Available money.
- c) Places possible to be visited
- d) Hobbies and works to be practiced
- e) Duties to be performed (what her religious, social, etc ).
- f) People to accompany.
- g) Cultural, sport and amusing centers available.
- h) Transportations.

### **(b) Student card**

The class is divided into three or four groups.

**The first drill:** All groups should try to do the following drill with the help of the teacher. The headmaster of your school asked you to plan for a picnic together with your class-mates. What are the factors you should count in order to secure the success of your picnic?



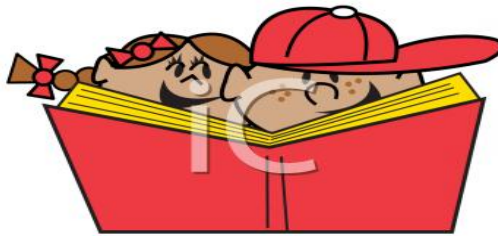
**The second drill:** In this drill, every group tries to solve/do the drill without the help of the teacher. Then all groups present their answers and the class discuss the answer of every group. What factors should you consider if you want to buy a school bag or/briefcase?



**The third drill:** Every student tries to individually discuss the following idea as it regards the factors to be taken into consideration before allowing all the class to



discuss it with him. What are the factors should you count when you borrow a book from the school -library.



#### **4. Homework sheet**

What a domestic (which is not eatable) do you buy from the store? The answer is a brown/ paper -basket – It's useful but not practical. Since it is used for things other containing vegetables it's useful since it refreshes our activity every day in case it is made of bright colors .Appealing to our imagination we can demonstrate and make many wonderful things with this paper-basket. Come on to fill it with hopes-collect all your hopes and put them in the basket and then empty it. Do this for once, twice, and many times. Take another basket to gather tattered, old, broken and try things. Write down the names or all the things you should take in your consideration before you start to improve the basket.

## **Lesson Three: Laws**

### **1. Introduction**

Laws: People need some groups of laws that help them regulate and control their lives, and then live in peace and happiness. They need such laws and rules to keep their rights and to ride any kind of anarchy- It seems easy for people to put laws and rules but it is very difficult for them to study and evaluate such laws properly before they adopt them. There are many laws which are put in a hurry and in an immature way. such laws lead to serious problems. In order to make laws mature and powerful, it's better to apply the two skills of thoughts' management and consideration of all factors.

### **2. Objectives**

The students may learn the following:

- a) The law should be clear to all people.
- b) It is not obligatory that the law should smut all people but the majority of them
- c) It is necessary to check laws from time to time.

### **3. Teaching Procedure**

#### **(a) Teacher card**

#### **Introductory Question**

- a. What happens if there are no laws/rules to regulate football?

### **Solved Example**

A teacher of one class tries to put rules/laws to control his class. Try to help him put fire laws/rules.

1. I should raise my hand before speaking.
2. I should wait my turn.
3. We should speak quietly.
4. We should co-operate.
5. I should get permission/ an excuse to come-in or to go-out.

### **(b) Student card**

The class is divided into three or four groups.

**The first drill:** The teacher works together with students to do the following drill:

One father tries to put a group of laws and rules or systems to regulate his family daily-life Try to help him put three rules/laws Then choose one of these rules to apply the two skills of thoughts management and the consideration of all factors.



**The second drill:** Every group tries to do the following drill:

An owner of a great mall tries to put laws/rules/regularities for the processes of sale and purchase in his mall. How can you help him put four laws/rules? Choose one of such laws/rules to apply the two skills of the thoughts management and consideration and all factors. All the class should discuss the student or the drill.



**The third drill:** Every student tries to do the following drill individually. One school plans to make a competition of The holy Quran memorization,. Help the

administration or this school to put five laws/rules to organize such a competition.  
Then all students should discuss their suggestions with each other.



#### **4. Homework sheet**

Do you still remember the basket you improved and decorated so as to use it for gathering tattered or old things which you like to get ride? Now that basket is ready. You mother asked you to lend it to your brother. You want to organize the way of lending. so, you put some rules for this purpose- Try to write down the rules you think sufficient to regulate the process of lending.

## **Lesson Four: Results, What will Happen?**

### **1. Introduction**

The skill of results: There should be some result (s) for every new invention, plan, law or decision. Such result ay last for a long time. The same is true when thinking of any work you like to do. That is to say that the result (s) of any work should be taken into consideration. Result may categorize in the followings kinds:

- Immediate results.
- Short – range results ( 1-5 years ).
- Intermediate – range results ( 5-25 years ).
- Long – results (more than 25 years).

### **2. Objectives**

**What does the student learn from this lesson?**

From this lesson the student learns the following:

1. Thinking in the future.
2. Thinking which are useful nowadays but useless in the future.
3. Thinking of not only his future but the future of others as well.
4. Knowing the result of any work before performing it helps to avoid falling in troubles.

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory attitude**

One student decided to postpone his study of mathematics until the day before his examination. As a result, he became unable to understand what his teacher explains during the lectures of mathematics. A week later, he found it difficult to do his homework. The day before the Examination, he found himself unable to study all the lessons because he did not understand them; and as so, he succeeded to answer only two questions of the exam. What are the results of the negligence of study?

##### **Solved example**

One father opened a saving account for his son. He used to save 20 dinars from the monthly income of his family. What are the result arising from such a disposal?

1. The short-runs result
  - a. The income of the family will be 20 dinars less than before.

- . b. The family will stop buying some of its demands
- 2. The intermediate – range results.
  - a. A good amount of money will be saved in his son's balance.
  - b. The son's esteem towards his parents will be greater.
- 3. Students will know/learn the importance of saving money.
- 4. The family will avoid the crises of study or any other capital of investment.

**(b) Student card**

Students are divided into three or four groups.

**The first drill:** All groups participate with their teacher to do the following drill:

There is a new tool which helps to expose liars. Try to fix the short-age intermediate-range, and long-range result of such an invent tool.



**The second drill:** A man decided to collect alms from the rich people in his district or quarter and distribute them to the poor. Now try, you and all your group members, to find the short -ranges, intermediate- range and long-range result of this project. The student tries to gather some empty cartons aiming at turning them into beautiful boxes



presented as gifts. Find the short-range, intermediate-range long-range result of his task/work.



#### 4. Homework sheet

Let's jump before you look! Close your eyes.. Come on! Jump and gush out like a sky rocket that produces orange fire penetrating the space with great wheeze. Come on! Leave the earth behind you and jump highly in the space/ air.

- Notice that the higher you jump the lighter your body is.
- The higher you jump the smaller the earth is.
- Imagine that you arrive at the first galaxy in the space.
- The gate will be opened and you will wander n the clean city of lightening.
- The people you will meet are lovely and eager to talk to you.
- Ask them why put on shining uniforms.
- Take the last look around you while preparing yourself to come back to your nation.- Say “see you” to your new friends and then go back to the earth.- Touch the ground \*\* Now, what about drawing a picture to your friends at that planet as you

imagine them? What are the logical results of the existence of other people living on other planets?

## **Lesson Five: goals' What do you want?**

### **1. Introduction**

a. The skill of „Goals“ Before you start any work or disposal, you should determine your goals first-That is you should know what you want to achieve Once your goals are clear in your mind, you will find your behavior more accurate, and as so, all your attitudes will be successful. Moreover, knowing the goals or others will help you deal with them in a better way. On the contrary the person who acts or behave at random without any definite goals in his mind, will find himself confused and faced with various obstacles that restrain his thinks and make him unable to achieve what he tends to realize.

### **2. Objectives**

**What does the student learn from this lesson?**

The students learn that:

1. Having clear goals ( of what he wants ) makes it easy for him to realize them.
2. People have different goals.
3. Some goals are more important than others.
4. Goals should be clear and suitable.
5. To realize great goals needs us to start with small/ simple ones.

### **3. Teaching Procedure (a) Teacher card**

#### **Questions**

Why do you go to school?

Is it necessary for us to know why we go to school? Why?

Teachers'' Card .3

#### **Solved Example**

A policeman, merchant, student, athlete, and an artist attended a football match. What is the goal of each of them? Write down three goals for everyone.

- Goals or the policeman

1. Enjoying himself.
2. Following/ chasing a thief.
3. Trying to create a new law of discipline utilizing the laws or football.

- Goals or the merchant

1. To support his team.
2. To advertise for his merchandise or business.

3. To choose one player to present some television advertisement about his merchandise.

- Goals of the student

1. To entertain himself releasing the pressure of his study and exemptions.
2. To meet his mates and to attend the match together.
3. To learn determination from the triumphant team.

- Goals of the artist

1. To observe one player who is acting the role of a football player in a Serial
2. To motivate people to attend such matches and support their national team.
3. To attract the attention of the mass media as an artist who used to support the national football team.

#### **(b) Student card**

Students are divided into three or four groups.

**The first drill:** All the group and their teacher work together to do this drill.

" You and your mates plan to make a picnic to Petra.

Write five goals for such a picnic."



**The second drill:** Every group tries to do the drill and then discuss it with all the class.

" Bedouins usually breed sheep .

Write four goals to be achieved by Bedouins when breeding sheep.



#### **(4) Homework sheet**

Utilizing our imagination, we can demonstrate and make many wonderful things.

Let's get use of the brown paper - basket trying to made some improvements:

- let's start with making some handles.

- Provide it with A cover.
- Put a margin for a pocket on one side.
- Write your name on it with capital black letters.
- Manage to specify some part of the basket to keep a radio.
- Give it three colors, and stand somewhere away from it and.
- Check whether you still want to make additional improvement;
- If yes, try to find your basket now?

Look! How fantastic it is to imagine. Can you write down three goals to achieve when you imagine.

## **Lesson Six: of Planning**

### **1. Introduction**

The skill of planning: is a practical systemized program of what is to be done in the future – for example, you put a plan for your lecture before you teach. The same is true when you try to make a trip, you should put a plane; and when you behave or decide to do any things, planning is necessary to secure the success. b. what does the student learn from the lesson?

### **2. Objectives**

**The student learns the following:**

1. How to make a plan.
2. The simpler the plan is the better.
3. You should think of all factors before you write your plan.
4. All things should be well-organized.
5. It's very important to decide goals before starting the plan.

**3. Teaching Procedure**

**(a) Teacher card**

**Introductory attitude**

The teacher presents plan of one lesson and discuss it with his students as it regards

1. Its elements.
2. Its procedures and motions.
3. The extent of its success and result.

**Solved example**

The teacher presents the plan of the prophet Mohammad (pence are on him) when emigrating from mekka to as it regards:

1. The previous preparations for emigration.
2. The cautions during emigration.

**(b) Student Card**

a. The teacher together with his student plan to start a campaign to clean their school. The main task or the first group is to put a plan for cleaning class-rooms. The task of the second group is planning to keep the corridors and to inlets clean; whereas

the task of the third group is to keep the yard and the playgrounds of the school clean.  
In the end, every group presents its plane to be discussed by other students.



#### **4. Homework**

Using your imagination, you are able enough to make plans and visions for things you decide to do depending on your thinking. The helps you design your future as you like. In the game below, you should use your mind to plan and design your future. Try to plan and design your room at home. In your mind, draw an imaginative picture for this room and then draw it on a sleep or paper. Let's start the design.

-Then we need a door for this room. As a fact, doors have different sizes, shapes, colors, and designs. Check the picture in your mind and then draw it on the paper.

- Now, paint its walls with the color you prefer.

- Now, your future room is ready; but it is empty.

Before you choose its furniture, think of the way to use this furniture- It is time to buy your room furniture. Now try to organize your room with the furniture you have chosen in they way you decide. You can make any modification (s) if you wish.



## **Lesson seven: The most important Things**

### **1. Introduction**

The skill of “the most important things”: To reach your thoughts and to decide the most important factors that affect your attitude/problem is very necessary. It is important to decide which of your thoughts is the most important ones- Doing so helps you to arrive at correct answers and accurate solutions and adequate attitudes.

### **2. Objectives**

**What does the student learn from this lesson?**

The students learn that:

1. It is important to get as many ideas as possible first; and then to choose the best of them.
2. Important things differ from one person to another.
3. The most important things help him to choose the best answer/solution to his problem.

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory attitude:**

Somebody wants to borrow some money from you- which of the followings factors the most important this to you?

Do you have any money? ☐ Do you trust this man? ☐

Can you lend him? ☐ When will he repay? ☐

##### **Solved example**

In school elections of student-council, you put some conditions for voting. Which one of the following the most important condition for you:

- The candidate should be one of your class-mates.
- The candidate should be a hand worker.
- The candidate should be interactive in all school activities.
- The candidate should be of your gender.

#### **(b) Student card**

Students are divided into three or four group.

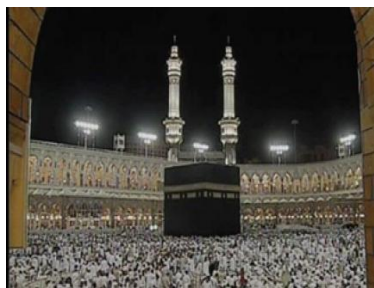
**The first drill:** The teacher and all the groups discuss the drill.

\* What are the main five things for the students?



**The second drill:** Every group discusses the drill and then presents its answer/solution in front of the students for more discussions.

\* What are the main five things in the life of a Muslim?



**The third drill:** Every student answers the drill and discusses with his class mates.

\* What are the main five things for the teacher in his work?

#### 4. Homework Sheet

We give the same homework or lesson six in addition to the following:

What are the main five things you wish to have in your future private room?

## **Lesson Eight: Substitutes and Probabilities**

### **1. Introduction**

The skill of substitutes and probabilities: There may happen to you an attitude of other people in such away that makes it obligatory to think of that attitude- In beginning you will try to find at least one reason for that attitude. For example, you may find of class-mate of yours inters; and you may refer the reason for his crying to being hit by other students. So, if you vary your things toward this situation in a comprehensive way, you will be led to many possibilities/probabilities that help you

interpret the situation; and then you will adopt all or some of these probabilities/possibilities.

## **2. Objectives**

### **What does the student learn from this lesson?**

From this lesson, the student learns the following:

1. The student will find more than one reason for an event.
2. He should go on looking for substitutes/alternatives.
3. Unless he is acquainted with other interpretations, he will never adopt the best of them.
4. He should ask others about more alternatives.

## **3. Teaching Procedure**

### **(a) Teacher card**

#### **Introductory attitude**

Imagine that you and your family were having a picnic; and when you come back, you found a large spot of water on the ground or your house. Put as many possibilities/ probabilities as possible to explain the reason behind the existence of that spot or water.

#### **Solved example**

Majed is an active and students; but he failed in the second-month examination or mathematics-what are reasons/possibilities which may explain his failure?

1. He did not study because he forgot the exam.
2. He was sick.
3. He cheated and He became confused during the exam.
4. He got a domestic/ family problem that attended his performance.
5. He got bored and did not study well.
6. There was a party at home and could not study the day before the exam.

**(b) Student card**

Students are divided into three or four groups.

**The first drill:** The teacher and the entire group co-operate so as to do/ solve this drill and discuss it.

“Suppose that electricity disconnects while you are preparing yourself for an important examination to be sat the other day tomorrow. What alternatives/ substitutes do you suggest?”



**The second drill:** Every group discusses the drill and then present its solution (s) in front of all the class.

" You discover that one dear friend of yours lies.

What substitutes do you have for such an attitude?



**The third drill:** Every student tries to do this drill before he discusses it with his class-mates.

One day you are taken by surprise that your father wants to talk to you separately.

What are the possibilities/ probabilities you may think of?



#### **4. Homework Sheet**

Listen! Somebody is knocking on the door.

- Who is coming to visit you? Give more than one substitute.
- What does he want from you?

### **Lessen Nine: Decisions**

#### **1. Introduction**

The skill of „decisions: Every time we are faced with situations that require definite decisions to be taken. When we intend to sleep or wake-up, to have our break-fast, to put-n clothes, to leave or to com-back, indeed all such matters are real decisions.

Similar decisions are very common every day whether the ones taken at home or at work. This needs us to be trained well n order to get our decisions more accurate, more mature and safer. For this purpose, we should consider all factors, fix goals, put



priorities, and have some choices and substitutes. All such skill helps us to take good decisions.

## **2. Objectives**

### **What does the student learn from this lesson?**

The student learns the following:

1. When taking a decision, all factors, goals and substitutes should be taken into consideration.
2. He should know the real reason (s) behind taking such a decision.
3. To take a decision sometime requires giving up something.

## **3. Teaching Procedure**

### **(a) Teacher card**

#### **Introductory attitude**

Khalil is idle/ or jobless. Now, he had two opportunities to have work. The first was a great bank; and the second was at a great company. His application was accepted in both jobs. He was supposed to sign the contract before the end of the previous month but he was torn to choose both the bank and the company were compelled to sign

contracts with other people; and so khalil remained jobless. What is the mistake committed by khalil?

**Solved example**

There is a very important match on T.V. today. It is very significant to attend it; but you have very difficult exam tomorrow and you have to work hard in order to prepare yourself very well. How will take the most suitable decision? With the use of the skill or results, what are the short-range results of attending the match?

1. Not to study for the exam.
2. Failure is expected in the exam.
3. Enjoying yourself by watches the match.

With the use of the skill of „substitutes“ what are the solutions and alternative available to you in case you study and leave the match?

1. My brother will tell me about the events or the match and is final result.
2. The math will be broadcasted once again on one T.V channel later.
3. The match can be watched through the internet.
4. My brother could record the match on the video and so I could watch it.

The decision: I will study and ask my brother to record the match to watch it later.

**(b) Students card**

Students are divided in to three or four group.

**The first drill:** All groups take part in the discussion of the drill together with their teacher.

“You won the prize of one competition. But the prize was rather strange: you either take 100 dinars all at once (or) immediately, or take the same amount as payments along one year. What is the decision to be taken?

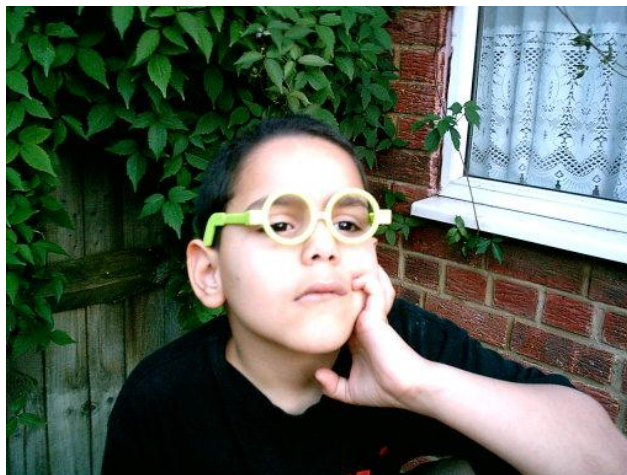


**The second drill:** Every group discusses it separately and then together will all students or the class.

“your friend quarreled with the leader of your group.

Consequently, your friend withdrew from the group and asked you to do the same.

You have to make your mind up. You either withdraw or stay in the same group. How can you manage?



**The third drill:** Every student tries to do this drill alone and then discusses it with his group.

“While staying alone at home, you suddenly hear some extraordinary sound. You have to take an immediate decision. What can you do at the moment?”



#### **4. Homework sheet**

Report the same of „Jump without looking”

You imaginary friends on the other planet ask you to stay with them in order to teach them reading and writing. In return, they will make you their leader while living on their planet. They are ready to positively to whatever you want. What is your decision? This measure is used in this study to know the effect of ( the name or the program ) in improving the concept of ego of low achievers who take part in this study as compared with other low achieves who did not get any kind or training on this program. The dimensions are distributed a money (36) yes-no short items each or which consists or six terms. The researcher has made some changes in order to make it suitable for low achievers. For this purpose, he asked some specialized professors or Jordan university and teacher or lea ruins- sources room to check the reliability or its content. Moreover, the reliability or the structure of every term is measured statistically. The find measurement is ( 0-28-0-55) and the measurement or its coefficient is ( 0-84).

## **Lesson Ten: Viewpoints of Others**

### **1. Introduction**

The skill of appreciating others "viewpoints

It is important to know the way other people think. As known, there are so many situations in which we need other people to share us our thinking. Sometimes, you prefer to ask a friend to accompany you when you like to buy something. That is because you may take his point of view into your consideration before you intend to buy. The opinions, attitudes, and points of view of the surrounding people may be of great use or advantage that helps you take decisions; and so, you find that their points of view come to be in harmony with your own. However, you should be aware of the

fact that the processing of thinking you follow is different from that which is followed or applied by other people. This leads us to conclude that others, points of view should be taken into consideration

## **2. Objectives.**

### **What does the student learn from this lesson?**

From this lesson, the student learns:

- a) They way(s) other people follow when thinking.
- b) To understand the points of view of others.
- c) That different people have different points of view.
- d) should be acquainted with the opinions of other people
- e) That one person's view may sound right for him; but it may not be the same for others.

## **3. Teaching Procedure**

### **(a) The Teacher card**

#### **Introductory Attitude**

Two friends quarreled. One of them told their school's Juries the problem of his friend aiming to get the help of the school headmaster to solve the problem. The second friend thought that his friend revealed his secret. What is the problem? Is it necessary for them to sit together in order to argue and understand the point of view of each other's?

#### **The solved example**

In front of a store that sells school-bags, one father refuses to buy his son a bag although the son insists on purchasing one- what is the point of view of each of the father and his son?

The father's point of view:

The quality of the bag is not so good to carry books; that is, it may be torn if many books are put inside it. Moreover, its color is not attractive; and overall it's rather expensive.

The son's point of view:

There is a picture of his favorite player on it. In addition, it also contains many pockets to put books and stationary.

Generally, it is easy to carry.

### **(b) Students card**

The students are divided into three or four groups.

**The first drill:** The teacher and group co-operate to do the first drill.

“ One teacher insists on preventing students to leave their class and go out. The reason behind the teacher's decision is the chaos they make. Some students accepted the decision as a kind of punishment; whereas other students rejected it.”



**The second drill:** Every group tries to do the drill and then present it in front of the class in order to discuss it with the other students.

“ Ahmed quarreled with his young brother, Raed. Each of them wanted to use the computer. Ahmed claimed that his brother has been using it since the morning. His brother pretended that he has not finished his game. Their father came in and asked Ahmed to leave the computer for his young son. ”

What is the point of view of each of Ahmed, Raed and their father?



#### **4. Homework sheet**

Do you still remember that eighth day of the week?

Do you remember how you spent it?: did you go to a picnic ? did you enjoy yourself in a quiet sleep or did you do your homework on that day?

Now, after which day do you prefer the eighth day of the week to come? Write your point of view regarding this topic, mentioning the reasons for such a choice- compare your opinion with the views of your class-mates.



## **Lesson Eleven: Yes/ No Creative**

### **1. Introduction**

a. The skill of „Yes, No, creative“:

- When you decide that something is true, you say „yes“.
- When you decide that something is false, you say „no“.
- When you are uncertain of the answer, you may say „perhaps“ or „don't know“.

Sometimes you don't want to give any decision towards an idea, but you want to manage it in a creative way; i.e. you look at the idea in an imaginative way or you suggest something regarding that idea. In this case, you will say „PO creative“.

## **2. Objectives**

### **What does the student learn from this lesson?**

In this lesson, the student learns that:

- 1) When we try to decide the truthfulness of an idea, we use the word „yes“ if the idea is true; but we use „no“ in case the idea is false/wrong.
- 2) When we deal with the idea in a creative way ( without „yes“ or „no“), we use the expression „Creative PO“
- 3) To use „Creative PO“ we should follow the following two-step process:
  - Should I decide this thing?
  - Do I want to deal with this in a creative way?
- 4) The treatment of an idea in a creative way means to look at it in an imaginative way, or to suggest something concerning it.

## **3. Teaching Procedure**

### **(a) Teacher card**

#### **Introductory attitude**

The teacher asks his students the following questions:

- 1) Is the idea of smoking right?
- 2) Is the idea of practicing sports good?

3) What do you think about making an imaginary cake as large as our classroom?

**The solved example**

Say „yes“, „no“, or „creative po“ to decide the following:

- a) Fi ve + six = eleven ( yes )
- b) The cow precedes the horse. ( No )
- c) Food is necessary for human beings. ( yes )
- d) Strange insects from Mars landed on the earth (creative po ).

**(b) Student card**

a. The teacher shows his students the following sentences in order to say:

„yes“, „no“ or „creative no)

**\* 1 + 1 = 111**

- The capital of The Hashemite Kingdom of Jordan is Amman.
- Restaurants do not offer food to costumers.
- Lebanon is a European country.
- Books fly in the sky.
- Cleanliness is important.
- Schools come to students.
- Ice float on water.
- The moon shines during the day.
- We are in a spaceship.



#### **4. Homework Sheet**

We will use „oops“ to express our surprise and astonishment. So, when you take something to an opposite or unexpected direction, you use this word to express your surprise.

You will imagine the rhythm/harmony; then go on to create some unexpected end.

There will be no wrong answers. Observe some nice, clever, but unnatural end. Now close your eyes and be ready to observe the rhythm to get it on end.

- Sleep flew in the air (oops) come on! Close your eyes and

imagine sleep flying in the air. What would happen, then?

What would you see? Write down all what you have imagined.

## **Lesson Twelve: Stepping Stone**

### **1. Introduction**

The stepping stone: is an idea we try not to adopt but to pass to other new ideas.

### **2. Objectives**

**What does the student learn from this lesson?**

From this lesson, the student is expected to learn:

- a) To choose the idea which presents „ the stepping stone“ so as to move
- b) To other new ideas.
- c) That it is not necessary that the „stepping stone“ of one subject would be suitable for other ( different ) subjects.
- d) To expect where he can move through the „stepping stone“.
- e) That the „stepping stone“ is a merely creative idea „po“.
- f) That it is possible to use more than one „stepping stone“ for one and the same subject.

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory attitude**

sami has got tired of memorizing chants and wished that his parents asked some teachers to read for him the chants so that he could memorize them. Later on, an idea came to his mind. The idea was to create a talking-book, and actually he succeeded in creating the book with the help of the physics teacher.

##### **Solved example**

If we say, “Zain Company of cell- communication decided to make the international calls free.” Is this idea impossible? if you consider it as the „stepping stone“ for another idea such as „The companies of advertisement pay the fees of such calls: That is when we make any international call, we ;listen first to some commercial

advertisements of certain companies which are supposed to pay our international calls, fees.”

**(b ) Student card**

The drill: aims at training students to choose the suitable stepping stone”. Every student should do this alone, and then discuss it with all his class mates.

\* Which of the sentences given below applies as a “stepping stone” for another new idea concerning shoes?

Shoes are good for fast walking.

☐

Shoes are used to score goals against counterparts.

☐

Fashion greatly affects shoes.

☐

Shoes should produce special sounds.

☐

All people should wear shoes of the same size.

☐

**The second drill:** students work in groups.

The student puts or writes questions and his teacher answers them.”

**The third drill:**

Use this „stepping stone” to get rid of exams.

Every group should discuss the drill before presenting it in front of the class. If we say, “The student's seat should go with the students to his home.” Utilize this idea as a „stepping stone“ to think of a design for students' seats.



#### **4. Homework Sheet**

The same introduction of lesson eleven.

Oh my God! The cow jumped over to the moon (oops)!

Use this „stepping stone“ to write a story for children.

## **Lesson: Thirteen: Random Inputs**

### **1. Introduction**

The skill of random input 61: sometimes you cannot get new ideas through the revision of some old ones. So, you use something randomly. That is sometimes which is not related to your recent situation or attitude you may go on using such arbitrary things until you get your thinking lead to new directions and methods.

## **2. Objectives**

### **What does the student learn from this lesson?**

From this lesson, the students learn:

- a) That it is impossible to get new ideas through thinking of the old ones.  
Thus, students should appeal to something randomly or something which is related to the situation/ attitude.
- b) Arbitrary thinking leads to new directions and methods.
- c) The use of the dual process:
  - What can I use as arbitrary inputs?
  - What may result from such an arbitrary inputs?
- d) Finding an arbitrary word through the use of any other word that happens to come to his mind while looking at whatever is surrounding him, or closing his eyes and putting his finger on a newspaper to choose any word. He may also choose some common words and write them down on paper, put them in a bag and choose one of them,

## **3. Teaching Procedure**

### **(a) Teacher card**



### **Introductory attitude**

Salim wanted to draw a picture of his teacher. No idea comes to his mind to draw. He collected different things from: His kitchen, his bedroom, and his garden. He put those things together. Then he drew them in colours- As a result, he got a very beautiful picture compared to the other pictures of his class mates.

### **Solved example**

Use words as arbitrary inputs to write a story about prayers. The arbitrary inputs are the words which starts with the Arabic letter „A“ Ahmed, Ardha ( earth), Ajmal ( more beautiful), Asdaq ( more reliable ), Ahmer ( red), Ashja'a ( more courageous ), Arwa'a ( more or wonderful attractive ), Aswad black ) Arnab ( rabbit), Akala (ate) and Amsa

### **(b) The student card**

Every group should try to do the drill with the help of its teacher. All groups do the second and the third drills before they present their answers in front of the class.

**The first drill:** Find out an arbitrary input that helps you create a new kind of food



**The second drill:** You utilize the shapes of different animals to draw a picture of a new creature.



**The third drill:** Find out some arbitrary inputs to create a new uniform of clothes.



#### **4. Homework Sheet**

The skill of making: Find out some arbitrary inputs to create and apply some new kinds of paper-bags.

### **Lesson Fourteen: Concept Challenge**

#### **1. Introduction**

The concept challenge: is the ability to oppose a common and reliable thought or opinion. Many common ideas may or may not be true. Such ideas may last for a long time because of their power of continuation.

Challenge: when you challenge a concept, you are indeed to ask the following questions:

- Is it necessary?
- What are its other alternatives?

You look for other ways in case you intend to oppose current ones.

## **2. Objectives**

**What does the student learn from this lesson?**

- a) Many of common ideas may or may not be true.
- b) Instead of taking things for granted, you can choose an idea or
- c) Concept and challenge it in order to check whether there is only one
- d) Way to deal with this concept or there are other ways used for the same purpose.
- e) It is necessary to limit the concept the student chooses to challenge.
- f) When challenging the concept, he should ask these questions:
  - Is it necessary?
  - What are its other alternatives?
  -

## **3. Teaching Procedure**

**(a) Teacher card**

### **Introductory attitude**

One official of the ministry said, “who says that the student should spend twelve years at school?

One of his assistants replied, ” what do you think about allowing superior students to jump/pass some grades?

As so, the system of acceleration of Jordanian schools took a place.

#### **d. Solved example**

Fatima, who is a pupil at one kindergarten, was requested to draw a plate. Fatima insisted that the plate should not be cyclic. So she drew a long and narrow plate that prolonged until the middle of the table. This plate helps you to move it to other side when you finish the food at the first side.

### **(b) Student card**

The first drill: The teacher and all the groups do this drill together.

The second and third drills: Every group tries to do these drills before presenting them in front of their class.

**The first drill:** choose any three concepts of each of the following aspects to challenge:

School life.

Home

( animated ) cartoons

**The second drill:** Each group chooses one of the concepts given in the previous drill to challenge. Every concept should not be repeated.

**The third drill:** All students challenge the concept of doing shopping.



#### **4. Homework Sheet**

will have to be about someone or something.100Your script for the year 2

Your main character may be a person, animal, or a thing . . . In your mind, make a list of the main characters that you wish to

Consider. . .

Think of preparing a list of the main figures personalities you like to include in the text. Beware of challenging the concept which is the main figure (human or animal) find a new way of thinking.

### **Lesson Fifteen: Dominant Idea**

## **1. Introduction**

The dominant idea can be defined as driving on the highway where passengers find it difficult to observe the two sides of the road-But for the purpose of finding new ideas, it may become obligatory for the drivers to leave the highway; i.e., leave the dominant idea and look for other ideas.

## **2. Objectives**

### **What does the student learn from this lesson?**

From this lesson, the students learn that:

- a) In most circumstances and/ or situations there should be a
- b) dominant idea that directs and governs them.
- c) It is necessary to leave the dominant idea and look for new ones.
- d) It may need him to use the dual process:
  - What is the dominant idea here?
  - Is it possible to leave it?

## **3. Teaching Procedure**

### **(a) Teacher card**

#### **Introductory attitude**

One teacher decided to give an extra program to his talented students but he ignored the idea of asking students to stay in the school after the working hours or to come to school in the vacation, thus, he decided to teach them the same subjects in different methods special for talented students.

- a) What is dominant in teaching talented students?

- b) How did the teacher escape from that idea?
- c) Why don't we make the dominant idea of any football team as :
  - Encouraging the youth and the hobbyists to play football.
  - Helping coaches to train beginners.
  - Entertaining people.

**(b) Student card**

Firstly, the first drill: is to be discussed by the teacher and his students.

The second and the third drills are to be discussed by groups first and then with all the class. The following are the drills:

**The first drill:** what is the dominant idea of each of the following aspects?

- Designing computers.
- Work.
- Designing clothes.

**The second drill:** Every group chooses the dominant idea found in the first drill and then try to leave it and look for other new ones.

**The third drill:** what are the other ideas that we may find if we ignore the idea that medicine is the remedy of all diseases?



#### **4. Homework Sheet**

The same homework of lesson twelve will be used..

What are other ideas which we might find if we ignored the idea that novels are there to be enjoyed?



## **Lesson sixteen: Defining the Problem**

### **1. Introduction**

When there is a big, unclear problem, there should be a definition within the problem that helps us limit them and according to the way we define the problem we will find a great difference in solving it.

### **2. Objectives**

#### **b. What does the student learn from this lesson?**

From this lesson, the students learn the following:

- a) For every problem there is more than one definition.
- b) Among these definitions, there is one definition which can limit the problem.
- c) According to the way of defining the problem, you will find a great
- d) Difference in the way of its solution.
- e) The student will use the dual process:
  - What is the real problem here?
  - How do you know the problem in a better way?

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory attitude**

The story of Thomas Edison

His teachers rejected his existence at school because they thought him stupid. But his mother found that the real problem of her son was that he was smart but his teacher could not deal with him. For this reason she started teaching him at home. The great result was that he succeeded in manufacturing the electric lamp after many trials.

##### **Solved Example**

Our supermarket suffered from one big problem. The problem was the increase of robberies of the shop. The problem was defined in the following ways:

The first definition: Lot of thieves can escape with their stolen goods. This makes it necessary to form secret bodies of investigation and appoint secret agents inside .shops.

The second definition: Thieves of goods do not know that there is some great danger in case they are arrested. This definition leads to the necessity of the use of the previous means of investigation (such as the T.V camera) and hiring guardians. Moreover, we should announce that some people were arrested.

#### **(b) Student card**

The teacher helps all groups to do the first drill.

The second and third drill are done by each group and discuss it with all the other students of the class.

**The first drill:** Some schools suffer from infiltration and escape of students before the end of their school hours.

Limit/ fix at least two definitions for this problem.

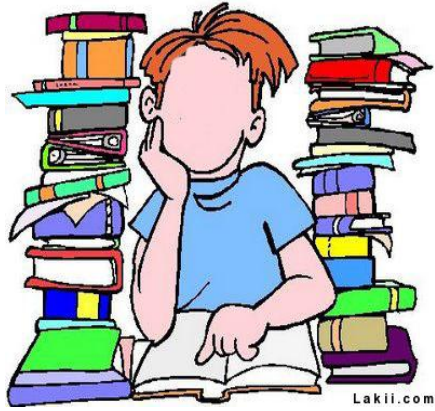


**The second drill:** Some students quarrel during breaks. Fix/limit three definitions for this problem.



**The third drill:** Some teachers complain that many students do not do their homework.

Fix/limit three definitions for this problem.



#### **4. Homework sheet**

As in lesson fourteen.

Defining your problem or tale-plot with two definitions.

## **Lesson Seventeen: Removal of Faults**

### **1. Introduction**

Faults are something we complain of, they may be lost or they may exist and we try to get rid of.

### **2. Objectives**

#### **What does the student learn from this lesson?**

In this lesson, the student learns the following:

- a) One way of developing ideas is through the identification of all faults which may be found in one idea and want to get rid of.
- b) Choosing faults is through:
  - The limitation of the things we complain of.
  - The limitation of the lost things we claim to exist.
  - The limitation of an existent thing; and we try to remove it.
- c) The use of the dual process:
  - What are (the) faults?
  - How can we get rid of them?

### **3. Teaching Procedure**

#### **(a) The Teachers card**

##### **Introductory Attitude**

Amjed opened a restaurant of Jordanian food. In the beginning it attracted a great number of people, and then the number of its customers began to decrease gradually.

When he tried to realize the reasons, he found that there was something wrong which

should be removed; the cooks used western spices which people did not like, as a result people did not return to his restaurant.

- a) What made Amjed think that there must be something wrong?
- b) What was the fault?
- c) How could he get rid of the fault?

### **Solved example**

A group of students were requested to decide the faults found in the service of the local bus and suggest any solutions for them.

They mentioned the following faults and the solution they suggested for them:

- a) The fees of short trips were very high/expensive.
- b) The solution was that there should be cheap offers for groups.

.The local buses are dirty most of the time.

- c) The solution was to punish whoever throws garbage inside the bus, or
- d) To appoint an officer whose job is to keep the bus clean.
- e) There were many stations for the buses to stop.
- f) The solution was distributing buses into two groups:
- g) The first group stops at every station.

The second starts from the first station and stop at the last one.

### **(b) Student card**

The teacher helps all groups to do this drill. The second and third drills: Every group tries to do the drill before discussing it with the class.

**The first drill:** what are the faults in the class room?

Mention all lost things; then mention the things which should be removed and suggest a way to correct them.



**The second drill:**

choose three faults existent in the morning-queue and suggest how to correct such faults



**The third drill:** choose three faults existent in your relations with your friends and suggest the way(s) to correct them.



#### **4. Homework sheet**

Choose some faults in the story you wrote in lesson sixteen and suggest any correction.



## **Lesson Eighteen: Combination**

### **1. Introduction**

It is possible to get something new from the combination of two or more things.

Sometimes, these things are added to each others; but in other times they are combined to produce something new and different.

### **2. Objectives**

#### **What does the student learn from this lesson?**

From this lesson, the student may learn:

- a) That it is possible to get a new idea through the process of combination.
- b) To use the dual process:
  - What can I combine?
  - What is the result?

### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory Attitude (Making lemonade)**

The teacher fetches a lemon, a cup of water, and some sugar. He squeezes the lemon, add the water and sugar to the lemonade and moves it.

- a) What are the components?
- b) What do they produce when we mix them?

#### **Solved example:**

If we combine the idea of „board“ and „computer“ what is the resulting idea?

- a) The clever board: This is a board supplied with computer
- b) Programming. c) Educational computer programs.

**(b) Student card**

The first drill is achieved by the teacher and all groups together. The second and third drills are done by the groups separately and then they discuss their answers with all the students of their class.

**The first drill:** what is the idea that we get if we combine the mobile and the bed to one another?



**The second drill:** what is the idea which results from the combination of the ideas of football and homework?



**The third drill:** choose two ideas: one from your family rules and the second from your school discipline. Now, combine both ideas to get one new idea.



#### 4. Homework sheet

Try to combine the idea of the paper-bags with the idea of „Jump without looking“  
what is the new idea you can get?

## **Lesson Nineteen: Requirements**

### **1. Introduction**

Requirements include all the things which are required in one certain attitude/situation-These different requirements constitute the idea, the solution or the invention of something. Such requirements lead to pressure which, in turn, results in making things work in a definite way.

### **2. Objectives**

#### **What does the student learn from this lesson?**

The student learns the following:

- a) Requirements include all things necessary for one attitude/situation.
- b) Different requirements constitute the idea or the solution or the
- c) Invention of something.
- d) Requirements lead to pressure which makes things work in a definite way.
- e) It is necessary to put a list of the requirements.
- f) Of every idea circumstance/situation.
- g) The negligence of any requirement leads to the failure of idea.It is necessary to order the ideas according to their importance.

### **3. Teaching Procedure**

#### **(a) Teacher card**

#### **Introductory Attitude**

One inventor came with same wonderful idea:

“A bicycle made of wood”. What is surprising was that the idea failed in almost all factories because the owners of those factories found out that it did not give bicycle-requirements their due in full.

What are the requirements which were behind the failure of that idea?

### **Solved example**

A designer of children toys intends to design one new toy. He puts the following requirements:

- Quality or substantiality.
- Attractiveness.
- Simplicity.
- Low price.
- Did the designer neglect any other requirements?

### **(b) Student card**

The first drill is done by all groups with the help of their teacher. The second and third drills are done by groups separately before they discuss their solutions with other students of their class.

**The first drill:** put a list requirements needed to get a uniform for teachers.



**The second drill:** Below is a list of the requirements necessary for publishing a newspaper. Put such requirements in a certain order in accordance with their importance.

- To gain money.
- People wish to read it.
- It should provide people with information that helps them nourish themselves.
- It should take care of advertising.



**The third drill:** You are requested to design a complete new sport/game. What are the requirements that help you make it famous and preferable by the public? Mention these requirements in accordance with their importance.



#### **4. Homework sheet**

Put a list of the requirements necessary for designing your future-room. Order your requirements according to their importance.

## **Lesson Twenty: Evaluation**

### **1. Introduction**

the skill of evaluation: It is the ability to produce decisions regarding the adequacy of ideas, their applications and having positive results.

An idea is evaluated according to two criteria:

- a) Our ability to provide many requirements.
- b) The consideration of their positive and negative features.

Evaluation may be in contrast with creation. It is true that any idea should be given a chance to succeed before we judge it. However, a judgment should be taken concerning its result and validity.

### **2. Objectives**

#### **What does the student learn from this lesson?**

From this lesson, the student learns the following:

- a) It is necessary to pronounce judgments regarding the
- b) validity/suitability of ideas and possibility of their application and
- c) Obtainment of positive result.
- d) Any creative idea which does not give good results and can not be
- e) Applied is not a successful idea.
- f) The use of the dual process:
  - How to suit these requirements?
  - What are the positive and negative features?



### **3. Teaching Procedure**

#### **(a) Teacher card**

##### **Introductory Attitude**

The teacher, together with his student, evaluates the idea of the cancellation of the morning-queue.

##### **Solved example**

Does sport(s) represent a suitable solution to the problem of boredom and weariness of youth?

Suggest any other solutions.

#### **(b) Student card**

The teacher and all the group of students do this drill. Then all groups do the second and third drills before discussing them with other students.

**The first drill:** Try to evaluate the following idea using the skill of processing information: “The cancellation of the school uniform”. Decide whether or not it is possible to apply it.



**The second drill:** Evaluate the following idea utilizing the skill of processing information and then decide whether it is accepted or rejected: “The cancellation of playing football at schools”



The third drill: Evaluate the following idea using the skill of processing information and then decide whether it is accepted or rejected: “The cancellation of the idea of homework”



#### **4. Homework sheet**

Evaluate your idea concerning the use of paper-bags discussed in lesson2.

## Torrance Test for Thinking Creatively With Words Verbal A

AGE :

GRADE :

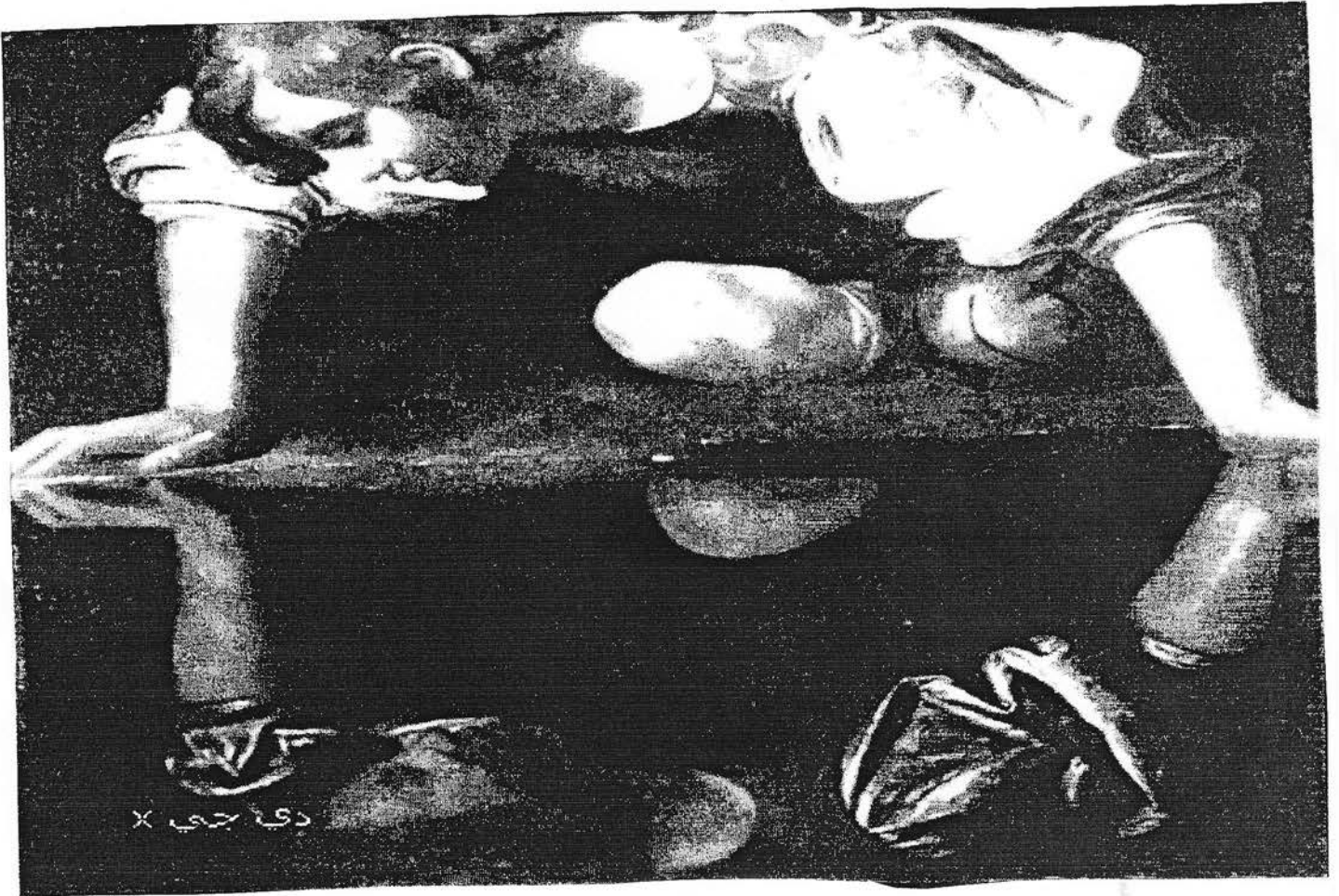
Date :

Work as fast as you can but do not be hasty. If you do not have ideas anymore before time finishes wait until you are given directions before you start the following activity and so on. If you have any question after start, do not speak loudly, raise your hand, you will find me beside you. I will try to answer your question.

1

### Activities 1-3: ASK-AND-GUESS

The first three activities will be based on the drawing below. These activities will give you a chance to see how good you are at asking questions to find out things that you don't know and in making guesses about possible causes and consequences of happenings. Look at the picture. What is happening? What can you tell for sure? What do you need to know to understand what is happening, what caused it to happen and what will be the result?



**Activity 1. ASKING:** On this page, write out all of the questions you can think of about the picture on the page opposite this one. Ask all of the questions you would need to ask to know for sure what is happening. Do not ask questions which can be answered just by looking at the drawing. You can continue to look back at the drawing as much as you want to.

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**Activity 2. GUESSING CAUSES:** In the spaces below, list as many *possible* causes as you can of the action shown in the picture on page 2. You may use things that might have happened just before the things that are happening in the picture, or something that happened a long time ago that made these things happen. Make as many guesses as you can. Don't be afraid to guess.

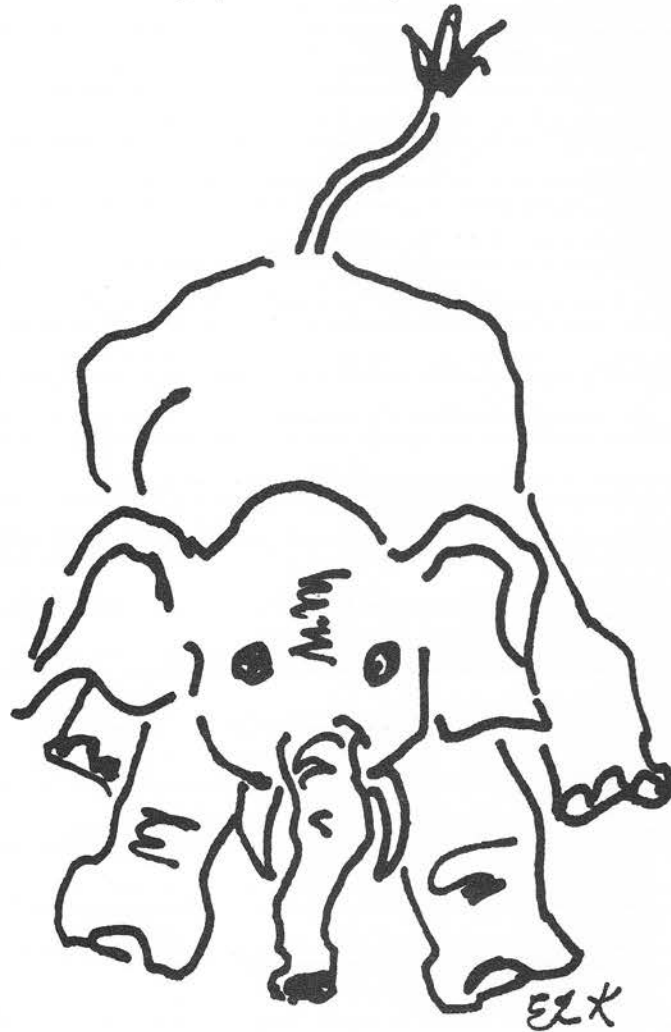
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**Activity 3. GUESSING CONSEQUENCES:** In the spaces below, list as many possibilities as you can of what might happen as a result of what is taking place in the picture on page 2. You may use things that might happen right afterwards or things that might happen as a result long afterwards in the future. Make as many guesses as you can. Don't be afraid to guess.

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#### Activity 4: PRODUCT IMPROVEMENT

In the middle of this page is a sketch of a stuffed toy elephant of the kind you can buy in most novelty stores for about five to six dollars. It is about six inches tall and weighs about a half pound. In the spaces on this page and the next one, list the cleverest, most interesting and unusual ways you can think of for changing this toy elephant so that children will have more fun playing with it. Do not worry about how much the change would cost. Think only about what would make it more fun to play with as a toy.



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32. \_\_\_\_\_

### Activity 5: UNUSUAL USES (Cardboard Boxes)

Most people throw their empty cardboard boxes away, but they have thousands of interesting and unusual uses. In the spaces below and on the next page, list as many of these interesting and unusual uses as you can think of. Do not limit yourself to any one size of box. You may use as many boxes as you like. Do not limit yourself to the uses you have seen or heard about; think about as many possible new uses as you can.

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50. \_\_\_\_\_

### Activity 6 JUST SUPPOSE

You will now be given an improbable situation—one that will probably never happen. You will have to *just suppose* that it has happened. This will give you a chance to use your imagination to think out all of the other exciting things that would happen IF this improbable situation were to come true.

In your imagination, *just suppose* that the situation described were to happen. THEN think of all of the other things that would happen because of it. In other words, what would be the consequences? Make as many guesses as you can.

The improbable situation—JUST SUPPOSE *clouds had strings attached to them which hang down to earth.* What would happen? List your ideas and guesses on the next page.



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## **Appendix B (2)**

### **Average standard Scoring of Torrance Test**

High	85% - 100%
Medium	17% - 84%
Low	0 - 16%

## **Appendix B (3)**

### **Calculating The Scores Of Torrance Test**

- (1) Paul Torrance indicated that the tests of creative thinking assessment need previous preparation in regards of:
  - (a) Training some people on the assessment process.
  - (b) Preparing samples of assessment forms that help the corrector exclude any wrong answer before grading.
  - (c) Previous preparation of forms of grades' registration.
  
- (2) This test measures three creative components: fluency, flexibility and originality, within every test of the six. The letters (F), (T), (M) and (S) are used to stand for fluency, 'flexibility' and 'originality' respectively. These abbreviations are placed on the specified position for every subtest and on the specified place in the list/ or students' answers form. The corrector hence calculates all the grades of each section of (fluency, flexibility and originality), thus, the total mark of every section will appear- and the three total marks are added to get the final grade of the test.
  
- (3) Fluency calculations is achieved by adding the number of the student's answers for every question after deleting any wrong and/ or repeated answers.
  
- (4) The grade of 'flexibility' is measured in regards of the number of types of answers for every question. Such answers are compared with some model answers given as samples of ideal answers found in the test assessment guide. Originality' is measured by recording all of the students' answers and then giving (one mark) for the unrepeated answers and (zero) for any repeated answer (as stated in the modifications of assessment 1990) in the old copy of the test

where there is a scale of (1-5) for 'originality'. According to this scale, marks are allocated according to the percentage of repetition of the answer. So, answers with very low repetition are given the highest mark (5). Cropley (2000) indicated that there is a final modification on measurement of 'originality, to become as follows

The answer which is repeated once is given (two marks), and the answer repeated twice is given (one mark); and a (zero) mark is given to any answer which is repeated for more than two times.

The researcher adopts the modifications of 1999 because he was acquainted with its original copy in addition to the fact that these modifications are the most suitable statistically since sample size is small.



## **Appendix C (1)**

### **Piers – Harris 2 Children's Self-Concept Scale**

**[The way I Feel About Myself]**

NAME:

AGE:

GENDER: Male / Female

SCHOOL:

CLASS:

	YES	NO
<b>1. My classmates make fun of me.</b>	Y	N
<b>2. I am a happy person.</b>	Y	N
<b>3. It is hard for me to make friends</b>	Y	N
<b>4. I am often sad.</b>	Y	N
<b>5. I am smart.</b>	Y	N
<b>6. I am shy.</b>	Y	N
<b>7. I get nervous when the teacher calls on me.</b>	Y	N
<b>8. My looks bother me.</b>	Y	N
<b>9. I am a leader in games and sports.</b>	Y	N
<b>10. I get worried when have tests in school.</b>	Y	N
<b>11. I am unpopular.</b>	Y	N
<b>12. I am well behaved in school.</b>	Y	N
<b>13. It is usually my fault when something goes wrong.</b>	Y	N
<b>14. I cause trouble to my family.</b>	Y	N
<b>15. I am strong.</b>	Y	N
<b>16. I am an important member of my family.</b>	Y	N
<b>17. I give up easily.</b>	Y	N
<b>18. I am good in my schoolwork.</b>	Y	N
<b>19. I do many bad things.</b>	Y	N
<b>20. I behave badly at home.</b>	Y	N
<b>21. I am slow in finishing my schoolwork.</b>	Y	N
<b>22. I am important member of my class.</b>	Y	N
<b>23. I am nervous.</b>	Y	N
<b>24. I can give a good report in front of the class.</b>	Y	N
<b>25. In school I am a dreamer.</b>	Y	N
<b>26. My friends like my ideas.</b>	Y	N
<b>27. I often get into trouble.</b>	Y	N
<b>28. I am lucky.</b>	Y	N
<b>29. I worry a lot.</b>	Y	N
<b>30. My parents expect too much of me.</b>	Y	N
<b>31. I like being the way I am.</b>	Y	N
<b>32. I feel left out of things.</b>	Y	N

<b>33. I have nice hair.</b>	<b>Y</b>	<b>N</b>
<b>34. I often volunteer in school.</b>	<b>Y</b>	<b>N</b>
<b>35. I wish were different.</b>	<b>Y</b>	<b>N</b>
<b>36. I hate school.</b>	<b>Y</b>	<b>N</b>
<b>37. I am among the last to be chosen for games and sports.</b>	<b>Y</b>	<b>N</b>
<b>38. I am often mean to other people.</b>	<b>Y</b>	<b>N</b>
<b>39. My classmates in school think I have good ideas.</b>	<b>Y</b>	<b>N</b>
<b>40. I am unhappy.</b>	<b>Y</b>	<b>N</b>
<b>41. I have many friends.</b>	<b>Y</b>	<b>N</b>
<b>42. I am cheerful.</b>	<b>Y</b>	<b>N</b>
<b>43. I am dumb about most things.</b>	<b>Y</b>	<b>N</b>
<b>44. I am good-looking.</b>	<b>Y</b>	<b>N</b>
<b>45. I get into a lot of fights.</b>	<b>Y</b>	<b>N</b>
<b>46. I am popular with boys.</b>	<b>Y</b>	<b>N</b>
<b>47. people pick on me.</b>	<b>Y</b>	<b>N</b>
<b>48. My family is disappointed in me.</b>	<b>Y</b>	<b>N</b>
<b>49. I have a pleasant face.</b>	<b>Y</b>	<b>N</b>
<b>50. When I up, I will be an important person.</b>	<b>Y</b>	<b>N</b>
<b>51. In games and sports, I watch instead of play.</b>	<b>Y</b>	<b>N</b>
<b>52. I forget what I learn.</b>	<b>Y</b>	<b>N</b>
<b>53. I am easy to get along with.</b>	<b>Y</b>	<b>N</b>
<b>54. I am popular with girls.</b>	<b>Y</b>	<b>N</b>
<b>55. I am a good reader.</b>	<b>Y</b>	<b>N</b>
<b>56. I am often afraid.</b>	<b>Y</b>	<b>N</b>
<b>57. I am different from other people.</b>	<b>Y</b>	<b>N</b>
<b>58. I think bad thoughts.</b>	<b>Y</b>	<b>N</b>
<b>59. I cry easily.</b>	<b>Y</b>	<b>N</b>
<b>60. I am a good person.</b>	<b>Y</b>	<b>N</b>

## Appendix C (2)

### Average standard Scoring of Piers-Harris2 Scale

Average	T-score	TOT Scale
High	$\leq 39T$	$\leq 14$
Medium	40T - 59T	15-83
Low	$\geq 60$	$\geq 84$

## **Appendix C (3)**

### **Calculating Scores of Piers-Harris 2**

To determine the Inconsistent Responding (INC) index raw score, review the 15 INC item pairs listed in the left column of the Scoring Worksheet. Make a check mark in the box next to each pair which the inconsistency conditions are met. For example, for the first pair listed (1), you mark the box only if Item I is scored “0” and Item 47 is scored “1” You do not mark the box Item I scored “1” and Item 7 is scored “0,” even though that also appears to be an inconsistent pair of responses. Count the number of check marks you make, and enter that number in the space labeled INC at the bottom of the Scoring worksheet (2). In this example, the inconsistency conditions were met for one pair: Item 5 was scored “0” and Item 43 was scored “1,” so a check mark was made in the box for this pair. The INC raw score in this example was 1.

To calculate the Response Bias (RES) index raw score, count the number of circles that appear in the “yes” column. Enter this number in the space labeled REX at the bottom of the Scoring Worksheet (3). In the example, 21 items were answered yes, so the RES raw score is 21.

### **Calculating the Self-Concept Scores**

The Self-Concept raw Scores include the Piers-Harris 2 Total (TOT) score and the six domain scale scores: Behavioral Adjustment (BEH), Intellectual and School Status (INT), physical Appearance and Attributes (PHY), Freedom From Anxiety (FRE), popularity (POP), and Happiness and Satisfaction (HAP). To obtain the raw TOT score,

count the number of items for which “1” is circled on the Scoring Worksheet and enter this number in the space labeled TOT (4) at the bottom of the page. In the example, 52 items are scored “1,” so the TOT raw score is 52.

To determine the raw scores for the six domain scales. Locate each item for which a “1” has been circled and make a check mark in the box(es) in the same row as that item. In Figure 1, “1” is circled for Item 12, so the two boxes in its row are checked (5). Count the number of check marks you have made in the columns that correspond to each domain scale. Enter these totals in the appropriate spaces at the bottom of the Scoring Worksheet. In the example, 14 items are checked in the BEH scale column, so this total is entered in the corresponding space (6).

Please note that you cannot calculate the TOT score by summing the raw scores from the six domain scales. Because some items appear on more than one scale, the TOT raw score is not equivalent to the sum of the domain scale raw scores.

### **Plotting the Profile**

Transfer the validity and Self-Concept raw scores from the Scoring Worksheet to the corresponding spaces at the bottom of the profile sheet (7). Circle the value in each column that corresponds to the raw score you have entered at the bottom. Then connect the circled scores to plot the profile. The T-score and percentile rank for each raw score can be found along the left and right margins of the profile sheet, in the same row where the circled raw score appears. Enter the T-score for the Validity and self-concept scales in the appropriate spaces at the bottom of the page. In figure 1, the TOT raw score is

52, so this value has been circled in the TOT column (8). The corresponding T-score is 56, and has been entered below the raw score for TOT at the bottom of the profile (9)

Plotting the T-score on the profile sheet allows you to see at a glance whether a child's scores are in the normal range, which is usually considered to be within 1 standard deviation of the mean. Because T-scores are standard scores with a mean of 50 and a standard deviation of 10, the normal range on the Piers-Harris 2 profile sheet is considered to be between 40T and 60T.

Now that you have scored the Piers-Harris 2, you are ready to interpret the results.

The next chapter provides detailed guidelines for interpretation.

## Appendix D

### Observation of the Modified Strategy-Based Module

<b>(1) Introduction</b>	<b>Used</b>	<b>Not used</b>	<b>Comments</b>
- Positive features			
- Negative features			
- Interesting features			
<b>(2) Teaching Procedures</b>			
<b>(a) Teacher Card</b>			
- What skill to be taught			
- Attitude			
- Examples used			
<b>(b) Student card</b>			
- First drill			
- Second drill			
- Third drill			
<b>(3) Homework</b>			



## **Appendix E**

### **Time table for teaching the Modified Based-Strategy Module**

Week	Lesson
First	1 , 2, 3, 4, 5,
Second	6, 7, 8, 9, 10
Third	11, 12, 13, 14, 15
Fourth	16, 17, 18, 19, 20